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CAREER DEVELOPMENT OF THE NAVY PROJECT MANAGER

Thomas Joseph Loftus

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Monterey, California

THESIS

CAREER DEVELOPMENT
OF THE
NAVY PROJECT MANAGER

by

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and

Benjamin E. Allen, Jr.

Thesis Advisor: J. W. Creighton

March 1973

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Career Development of the Navy Project Manager

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MASTER OF SCIENCE IN MANAGEMENT

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ABSTRACT

Project Manager Development programs in use in defense industry have been surveyed and opportunities for improvement in subspecialty development identified. In addition, suggested billets for systems acquisition management development are listed and a method of individual development planning proposed.

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I. INTRODUCTION

When Moses organized the Jewish nation, he became an early advocate of the line form of organization which has been in use ever since. In the past two decades, however, a more concentrated form of organization has come into vogue as project offices have been organized to give attention to the management of special programs of great complexity.

Because of the large commitment of scarce resources and the requirement for close management supervision over an extended period of time, the importance of project management in defense industry, the military services in general and the Navy in particular has increased until this form of organization has had a significant impact on the entire Department of Defense. The largest percentage of the Navy's acquisition dollar is being committed by project managers in the execution of contracts which extend over a period of time which varies from a couple of years to the better part of a decade. Although many of the decisions are being made by forces outside the project, the project manager is still the focus of the acquisition process.

The project manager is called upon to be virtually "all things to all men." He needs to have knowledge of the technology which is the basis for his project, of financial management, procurement and contract administration, contract law, industrial or production engineering, and political science, to name just a few. Although his staff members provide him with the detailed expertise in each of these areas, there is still a requirement for the project manager to have a good familiarity with each of these disciplines as they apply to his project.

If one of the measures of executive development is the length of planning horizon or discretionary time-span, and the amount of resources he can commit, then the Navy project manager ranks with the executives of many of the largest corporations. At the same time he must operate within an intricate maze of interfaces, political influence and technical complexity if he is to deliver a worthwhile product to the fleet. Depending upon the size and phase of his program, the project manager will come under the close scrutiny of top-level military, Department of Defense and Congressional officials, all concerned about the problems involved in system acquisition.

All of this complexity and high level visibility makes the position of the project manager one of the most difficult to fill in the Navy today. Up to now the project managers have been selected from the available officers from the unrestricted and restricted line communities who are best qualified for the project in question. There has been no concerted effort to prepare officers who will have the specific mixture of knowledge, skill and experience required for the position. As a result the project manager usually spends the first six months filling in the gaps in his background. The impression that an officer qualified for command of an operating unit should be equally qualified to be a project manager has not always proven true.

For this reason there has been a growing concern in the upper levels of the Department of Defense and the Navy itself with the need for a form of career development for project managers.

Career development in itself - understood in its fullest extent - includes the full range of vocational selection, recruiting, development and appraisal. Only part of this comprehensive subject can be treated here. This thesis will not discuss the psychology of making a career selection since it is presumed that all of the naval officers involved in the development process - for whatever reasons - have already decided to make a career in the Navy. Similarly the subjects of recruiting and appraisal will only be treated in passing as they apply to systems acquisition. This thesis will limit itself to three areas of career development: the roles of education, functional training and experience in development.

Included in the general subject of career development are the more specific types of development. Considered from the more general to the more specific, they are:

manpower development

manager development

executive development

project manager development

project manager development in the Navy.

As understood in this study, manpower development is the process by which management determines how the organization should move from its current manpower position to its desired manpower position. Manager development is the process of developing within the individual (or group of individuals) the various types of knowledge, skills and experience needed to manage. Executive development is manager development which concentrates on the individuals who have been judged to have the potential

to reach the upper levels of the organization. Development of project managers is the preparation of the individual to act as unifying agent for a project with respect to the management of resources of time, material and people. By development of Navy project managers is understood the preparation of naval officers to manage the designated projects in the various systems commands. For reasons which will be treated later, project managers on the Naval Material Command level and the managers of the smaller, "non-designated" programs will be excluded from this discussion.

As much as possible, an effort has been made to make the text of the thesis more readable by moving detailed analysis and statistics to the appendices. The intention is to enable the reader to understand the study from the text so that he need refer to the appropriate appendices only if he wishes to pursue the details of any particular question.

It will be the purpose of this thesis, then, to study the current effort which is being made in the Navy to prepare project managers for the systems commands and to propose a program to assist in this development.

II. NATURE OF THE PROBLEM

In this section of the thesis the characteristics of a good executive development program will be discussed through a survey of the literature in this field. Then the current project manager development programs being used by defense industry corporations will be presented. Finally, the effort the Navy has made up to the present will be summarized by way of background for this study. All of this will serve to define the problem to be considered in this thesis.

A. CHARACTERISTICS OF EXECUTIVE DEVELOPMENT PROGRAMS

1. Nature of Executive Development

There are certain priciples which can be used to summarize the nature of executive development.

One of the reasons for resisting a formal program of development is the unwillingness to create a paperwork, administrative monster which sets up so many blocks which must be checked off for the individual to reach the goal of the development process. Also it is desirable to leave open the possibility for an individual to be selected as a project manager who has not gone through the development program. Therefore the first principle of an effective program must be that development is a dynamic process, not one which can be completed once and for all and checked off in a formal fashion on a requirements list. Since the type of program being considered here is based on education and experience, it must remain a continuing process, never really completed.

Any executive development program is expensive. And yet, if it is to be implemented in a realistic fashion, it cannot be accomplished in a day or a year. Therefore, the program must be based on a real need, otherwise the expenditure of financial and personnel resources cannot be justified. A program which is not grounded in need will fluctuate widely and be a ready target for program cutback under fiscal reduction.

An on-going development program requires initiative and support from all levels of the organization, beginning with top-level management. At the same time the primary source of initiative must be the individual participant in the program. The failure to develop either source of initiative will doom the program to flourish for a while and then wither away.

A workable program must have the proper climate for the growth of its participants. The opportunity must exist for the individual to get the chance he needs to grow. For instance, a severe cutback in the number of projects and a reduction in the resources designated for acquisition would severely limit and restrict the development program.

In keeping with the requirement for individual initiative, an effective program must be flexible enough to allow for differences due to individuals, situation, and organizational level. The position requirements vary with the different types and phases of projects, so the skills to be developed must allow room for adjustment to varying requirements. However, the variations which must be built into the program to satisfy individual needs must not detract from the program's ability to benefit the entire organization, rather than the personal needs of a few. For this reason planning and organization-wide direction must be provided.

Any development program should stress three types of skills: technical, human and conceptual, which are appropriate to the level of development. [Houston, 1961, Jucius, 1959, Dooher, 1952] As the individual moves up in the organization the heavy concentration on technical skills gives way to the need to understand and work with people and to develop a wider view of organizational problems and objectives.

It is very important that the development program be work-oriented. After a broad basis is prepared in the education portion of the development program, the methods should be kept as close to doing as possible. The training should be integrated into regular operations whenever possible so that the individual can appreciate the relationship between the training and the job he is doing. There are many types of training available and the most appropriate techniques available should be utilized.

2. Elements of a Comprehensive Program

Based on these principles, what are the elements of a comprehensive development program? [Bellows, 1962, Schleh, 1958, Houston, 1961]

The first element chronologically and in order of importance is organizational planning. The purpose in conducting such planning is to establish the needs which will determine the direction and scope of the program and will provide the content of the training related to the requirements of the positions for which personnel are to be developed.

First an appraisal must be made of the present organizational structure in order to establish today's needs. Then a review of the organization's plans for the next five to ten year period must be conducted to detect any changes which might affect the development programs based on tomorrow's needs.

In order to allocate resources, program-targeting should be used to focus effort in the areas of greatest importance and to identify the key positions for which personnel must be developed. Once the need has been established, executive evaluation of existing personnel with regard to ability, experience, and potential will help establish training needs for these personnel. Comparison of estimated needs and existing supply will lead to the determination of a replacement inventory which can then be phased into the program over the entire planning period.

The importance of organizational planning as the first element is based on the fact that the nature of the position (or billet requirement) and the talent level of the available input into the development program will place the program on a need basis.

The second element of this program, planning for individual development, must be based on equally down-to-earth criteria. Any development program must stress first and foremost individual initiative. Unless this ingredient is preserved, the whole process becomes meaningless mechanics, highly structured, but responding neither to the needs of the individual nor the organization. On the other hand, a career development program which is supposed to contribute to organizational as well as individual goals cannot be tailored exactly to the individual as one the individual would design for himself.

Again, the individual in the development program must have the motivation and the potential to develop. Appraisal by the individual's immediate supervisor should evaluate, not only his present performance, but also his future capability and potential. The tendency cited by the Peter Principle [Peter, 1969] to promote the individual beyond his level of competence is a failure of the evaluator to properly appraise the

individual and a failure of the man to come to an understanding of his own capabilities and the requirements of the position which is his goal.[1]

This latter failure plays an important part in the development program. The potential executive must be given well-informed counsel which will help him understand the program and its application to him. He must also be given a chance to select his own goals from those for which he is qualified where this is consistent with the needs of the organization. Thus individual development planning must be based on information, understanding and participation.

Thus the success of a program with these two elements will be dependent on the continued top-level support of the entire program, on key-executive participation, on individual initiative and, because the program requires direction, on staff assistance.

3. Techniques for Executive Development

Techniques for executive development can be grouped into three categories. [Cady, 1958, McFarland, 1968, Osipow, 1968].

The on-the-job techniques make maximum use of work-orientation and are easier to work into normal operation. When the work load is particularly heavy and the tendency is to forget development because of the press of every day pressures, these techniques are still useful. The supervisor must help his subordinate get the maximum benefit and experience from his present job. When feasible, job rotation should be used to give him wider experience in the same office. Advanced planning can increase

---

[1] Industry has begun to use "assessment centers" to evaluate the potential of management candidates for their highest positions.

the feasibility of this planned progression, while waiting until the last minute will mean the individual will not be ready to make the switch to a different job. Other types of development which can be used on-the-job include the creation of "assistant-to" positions, and committees and junior boards.

The "assistant-to" position allows the individual to observe and learn from the incumbent manager, without the burden of his responsibility. It is a training billet and, as such, is not acceptable to everyone as being a worthwhile way to develop executive personnel. [Townsend, 1970] In a climate where every position must be justified, training billets are generally considered superfluous.

On the other hand there are many committees for coordination purposes on which the developing manager can get experience of what the executive position requires. Pariticipation on these committees can often help to broaden the overall understanding and viewpoint of the individual beyond his own functional area.

Then there are off-the-job, but during-working-hours training methods which promote the continuing development in a formal way. In this way the organization is saying to the individual that it considers the additional knowledge or skill important enough to set aside time from the normal operating schedule so the individual can get the benefit of the training. Such methods as conference programs, professional workshops, functional training and psychological (individual or group) approach training can be conducted off-the-job but on organization time.

The third category of techniques emphasizes the individual development aspect of the program as it takes place after hours. Individuals who are inclined to schedule their own after-hour programs should

be encouraged to do so. The act of self development is beneficial to overall development, whether or not the particular object of study is directly related to the individual's present assignment. Tuition aid and similar programs should be organized to promote the self development motivation.

4. Present Organization Development Practices

A survey of organizational executive development practices [Houston, 1961] has produced a number of conclusions about this type of program. There is growing evidence that many companies are developing definite philosophies of manager development although there is wide divergence in both the comprehensiveness and continuity of these programs. There is a growing focus on individual self-development planning based on experience, ability, interests and needs of individuals. These programs are usually work-centered, concentrating on job-rotation and on-the-job training. There is wide variety in both the content and method of instruction in company-operated courses, but most programs offer a variety of off-the-job courses. In many cases there is a lack of appreciation of the time and effort required for effective education and development.

The failing of development programs is usually based on certain incorrect attitudes about manager training.

a. Everyone's doing it. Let's get on the bandwagon.

b. Why not - as long as business is good?

c. Lets hit the weak spots.

d. Let the experts do it.

e. Joe has taken the course. I can't see it has done him any good.

f. We know what you need and what needs to be done.[2]

Despite the failings of these programs, executive development does provide rewards for the individual and the organization. The individual has increased managerial skills with an improvement in the potential manager's background and his appreciation of his company's overall operations and objectives. There has been a creation of a reserve of qualified personnel. There is a greater delegation of responsibility and authority to the subordinate who is now better qualified to accept more responsibility. There is improved selection for promotion because of the increase in qualification. There is a minimum delay in staffing key positions and a provision for the best combination of youth, vigor, and experience. At the same time, there is improved morale and increased attraction of talent in recruiting programs. Finally there has been an increased effectiveness and reduced cost, resulting in a greater assurance of continued profitability because of the executive development programs.

This section of the study has outlined the characteristics of an effective executive development program as described in the academic literature on the subject. It serves as a natural introduction to the examination of the programs presently in use in the defense industry which follows.

---

[2] Houston, George C., Manager Development, Richard Irwin, Homewood, Ill., 1961, p. 30.

B. PROJECT MANAGER CAREER DEVELOPMENT IN DEFENSE INDUSTRY

A background survey was conducted in order to determine generally what action had been taken to date in private corporations to implement a porject manager development program. Companies engaged in defense industry were selected because it was felt that they were the most likely corporations to adopt project management techniques. The results of the survey in general confirmed the conclusions of the preceding section.

1. Methodology

Poor's Index was used to identify key addressees in the companies selected. The corporate officer responsible for executive development was identified by name where possible so that the letter requesting information could be sent to a specific individual rather than a position title. A letter was drafted which explained the purpose of the study, provided a time table for the effort so as to expedite replies, and requested the following action:

> The addressee was requested to send whatever information was available about programs planned or in being, including a copy of the plan itself. If no written description of the plan was available, the addressee was requested to write a brief memorandum describing what was being done to develop project managers.
>
> If the addressee wasnot the individual responsible for the program, he was requested to forward the letter to the proper person.

Twenty-seven companies were solicited, and seventeen responded. They were:

Aluminum Company of America
Bendix Corporation
General Dynamics Corporation
General Electric Company
Grumman Aerospace Corporation
Honeywell Aerospace Division
Hughes Aircraft Company
Ling-Temco-Vought, Inc.
Litton Industries, Inc.
Lockheed Aircraft Corporation
Martin-Marietta Corporation
McDonnell Aircraft Company
Newport News Shipbuilding and Drydock Company
North American Rockwell Corporation
Sikorsky Aircraft Corporation
Sperry-Rand Corporation
Westinghouse Electric Corporation

2. General Results and Conclusions

Almost without exception, the respondents reported that they do not have, or plan, a formal program for the development of project managers as such. The career development emphasis is placed on management development or executive development. Individual initiative, personal counseling, and personal career planning are stressed. Information as to the availability and admission requirements of work-oriented training programs, in-house seminars and functional training courses, and off-the-job educational opportunities are made available to the individual. He is encouraged to qualify for, and take advantage of these programs after being counseled and after he has set his personal goals. His performance and attitudes are evaluated as he develops in this environment, and program managers[3] are selected from the pool of talent

[3]For purposes of this paper, the terms "project manager" and "program manager" are synonymous.

thus formed. The criteria for selection to the project manager position seem to be based on technical competence, past performance and experience, and customer rapport. In the absence of formal, clearly defined development programs, management by objectives, rotational assignments, and brief seminars appear to be popular in fulfilling the needs for project manager training. The following paragraphs briefly characterize some of the more informal approaches to project manager career development.

a. Hughes Aircraft Company

The company acts on the assumption that the creative environment is enhanced by permitting individuals to gravitate to fields of their own choosing. As the individuals emerge as potential program managers, they are encouraged to take advantage of outside educational opportunities to further their development. Some in-house courses on subjects related to program management are also presented regularly. Program managers are selected primarily on the basis of residency, experience, and performance.

b. Westinghouse Electric Corporation

An intensive study of project management efforts has been conducted at the Defense and Space Center in Baltimore, Maryland during the past two years. After questionnaire surveys and interviews with project and functional managers, a series of one day seminars was conducted with the purpose of developing cooperation between the groups and presenting specific training in the project management function. While no formal program of development is employed, the company does use management by objectives and rotational assignments to develop project manager skills.

c. General Dynamics Corporation

The company lacks a definitive development plan. Project managers are selected from a pool of personnel who have been identified as high potentials by the evaluation process. After having been so identified, the individuals are given rotational assignments designed to familiarize them with the company's organizational structure and procedures, key elements of the work process, the objectives of specific areas in the company, and the company talent available. The individual's special interests and skills are evaluated during these assignments. While formal education is not a major factor in project manager selection, those who are selected for such positions seem to enjoy a background which includes both engineering and business skills.

d. Newport News Shipbuilding and Drydock Company

The project management concept is relatively new at Newport News and formal career development plans have not been formulated. Selection is based on experience and performance. Four projects have been established by the company. Two of the project managers hold engineering degrees whereas the other two are graduates of the company's apprentice school.

e. Honeywell Aerospace Division

The selection process for project managers is based on experience and performance, as in the foregoing cases, but the manager development process is a bit more formally structured. The company views management by objectives as the hub of its management policy, and the individual is counseled to develop and pursue his own career objectives. The company offers in-house seminars to satisfy the development needs of the employee. The company also supports a program of after-hours education, some courses of which carry college credit.

3. Formal Development Programs

Some of the respondents to the defense industry survey presented programs which appeared to be more formally structured than those described above in the sense that they seemed to embody most of the elements of the idealized program presented in Section II, A. It is felt that these programs offer some features which might be adapted or incorporated into a comprehensive plan for the career development of Navy project managers. The formal elements of these plans are contained in Appendix A. A brief discussion of each follows.

a. Sikorsky Aircraft Corporation

Admission to the Administrative/Management Training Program is by application of the candidate and recommendation of his line superior. He is required to have a college degree and at least one year's work experience with Sikorsky or its equivalent. The program is designed to train the individual for managerial and/or administrative assignments. It is approximately one year in length and is divided into three phases. Phase I is work-oriented and centers on manufacturing activities. Phase II consists of a three week service school which transitions the trainee from general manufacturing to work in a specific program activity. Phase III embodies a comprehensive exploration of the sourcing, planning, allocation, and utilization of a division's total resources as seen through a representative major program, with particular attention given to the control interfaces within and between departments. Generally, all training courses are developed and presented in-house during regular working hours. The training program is an important part of what Sikorsky's management sees as a pattern of experience that

provides them with a group of able project and program managers. The pattern includes assignments to program proposal teams or program management organizations following the training.

b. Grumman Aerospace Corporation

The company has a strong orientation toward both project management and professional development. It is the company's observation that the skills required of the project manager change from project to project. For example, the project manager for a research and development project requires a strong technical education and background in order to provide proper insight into the development of a technically capable weapon system. In production programs, the project manager must be more oriented to manufacturing techniques, cost controls, and, in general, ways of improving the product from both hardware and cost standpoints. Another example relates to the size of the project. The project manager for a large project requires a high level of experience, maturity, and managerial skill. He must have the ability to delegate authority and to coordinate large groups of people. On the other hand, the project manager for a small project requires a greater amount of technical skill and product orientation because of his smaller staff.

The following quotation from the letter received from the Grumman Corporation illustrates what it looks for in the project manager's background, and how he is trained:

> Generally the Program Manager should have a formal education preferably in the sciences with some formal or on-the-job business training. This should be balanced by a carefully planned career improvement program, including selected positions within the company that will add to his background and experience. These might include such positions as Program Staff, Assistant Program Manager and major Subcontractor Manager. In addition, assignment to corporate

> planning committees and special in-house courses is desirable. Attendance at special management courses such as the Program Manager's Course at the Defense Systems Management School is important in the overall training of the Program Manager and his career should include this type of training during his middle to late thirties.
>
> Additional short courses and seminars should be scheduled following this schooling, to assure his remaining up-to-date in the latest management techniques and customer and company requirements. [4]

A description of the company's "Professional Development Program" was forwarded with this letter as an example of a specific in-house instrument designed to broaden the individual's experience in preparation for future assignments. Candidates for the program generally have between five and ten years professional experience, including at least two years of company residence, hold a bachelor's degree or equivalent, and are ranked very high in both performance and potential. The individual's parent department initiates nominations, and participates in the selection of program participants. The parent department also helps the individual establish experience goals, approves those goals once established, monitors the individual's progress in the program, provides counseling, and receives regular reports from the Professional Development Section of the Training and Development Department. Program members are considered to be individuals selected and temporarily transferred by functional departments for special, identified career development aligned with the goals of the parent department.

The program itself consists of a two year period of varied, responsible, and productive working assignments divided into six month

---

[4]Vice President, Director of Aircraft, Marine and Ground Transportation Programs, Grumman Aerospace Corporation Letter to LCDR Thomas J. Loftus, 23 October 1972, p. 3.

segments. Each segment is spent in one of four company areas. The program is based on the concept of expanding the individual's capability through selected experience, classroom work, and career guidance, coupled with a planned series of lectures and seminars. The objectives of the program are:

> To broaden the participant's knowledge of corporate organization, policy and operating environment.
>
> To extend the participant's experience, knowledge, and capability in disciplines associated with his career development requirements as established by his nominating department.
>
> To insure the continuity of leadership at the professional level in the company's business, technical and manufacturing operations.

A requirement for unique emphasis by discipline causes the program to be divided into three areas of option within the above framework. These areas are identified as business, manufacturing, and engineering. The differences between the options are in the area of selection of program members, assignments, course work, and program reporting responsibilities. Program administration, planning and reporting procedures, corporate policy guidelines, and about seventy-five percent of the lecture seminar series are common to all options.

c. Lockheed Aircraft Company

The Lockheed Company responded with information from two of its major subsidiaries: The Lockheed-California Company and the Lockheed Missiles and Space Company, Incorporated. Of the two, Lockheed-California Company's is the less formal and includes most of the elements discussed in Section II, B. 2 above. Lockheed Missile and Space Company's plan is more formal and centers on individual goal-setting, periodic review of achievements and developmental needs, and the encouragement of

self improvement. The key to the development effort is the identification of individuals who have significant advancement potential. Each manager seeks to identify those of his subordinates who can be so classified, and then has these nominations approved by higher management. Each individual who is identified as a high potential is required to complete an employee development plan. This plan shows both what the individual's developmental goals are, and what his superior is committing himself to in helping the individual attain those goals. Both the individual and his superior review the plan quarterly, and revise it annually. The development plan is aimed at the development of capable managers, and not project managers per se. However, since it is based on a group of activities tailored to individual strengths and weaknesses, it serves to identify those characteristics, traits, and skills which each individual possesses so that the requirements for a specific project manager can be easily matched with an individual who can fulfill those requirements.

d. General Electric Company

The General Electric Company also emphasizes individual development planning and self improvement, but uses an interesting technique to enhance that effort. The company employs a "Talent Development Program" as an appraisal and development process for managers and potential managers. This program is conducted in the form of a five-day seminar. Participants are selected from applicants who have high growth potential in managerial positions and are so endorsed by their superiors. The key objectives of the program are to:

> Motivate the self-development of the participant and teach him a process for setting relevant goals and identifying workable actions to achieve those goals.

Help identify the kinds of tasks or job assignments on which the individual is apt to make his most effective contribution and the kinds of jobs or developmental activities which will be most effective in developing his talent.

Help identify individuals with high growth potential for managerial positions early in their careers.

Staff members who conduct the seminars are selected from in-house sources. Participants are interviewed by the staff members to evaluate both administrative and adaptive skills. Participants are observed during situational exercises and evaluated as to their problem-solving, decision-making, and general managerial abilities. During the seminar, staff members work both formally and informally with the individual to assist him in preparing his development plan. They also prepare overall appraisals of the individual, developmental recommendations for him, and managerial guidelines for his development. These plans then become a basis for dialogue between the individual and his superior. A follow-up visit is conducted by a former staff member within three to five weeks after the individual completes the seminar. The purpose of this visit is to assist the individual and his managers in the implementation of his development program.

e. Martin Marietta Corporation

Martin Marietta utilizes an "Individual Development Plan" in which the individual identifies both his short range and long range goals, the developmental activities required to attain them, and the priorities for those activities. He is instructed to work with his boss in completing these functions. The plan is retained by the indivdual, and there are provisions for him to evaluate his progess and the effectiveness of his plan at each step of the developmental process.

The company also uses a Program Manager's Training course to train small contract program managers and selected technical professionals in the program manager's function. The length of the program varies so as to accomodate individual needs, and is divided into three phases: Formal Classroom Instruction, On-the-job Experience, and Customer Briefings and Contacts. Instructors for the course are experienced program managers and specialists from line departments. Admission to the program is by selection of an ad hoc advisory committee selected by the Vice President of Technical Operations. Participants include both program managers who are selected to manage medium size contracts and technical professionals not yet managing programs but who have been selected to manage future programs.

4. Summary

The results of the survey of defense industry corporations may be generalized by the following observations:

a. Development of project managers emerges naturally from broader plans to develop general managerial talent.

b. The emphasis is on individual goal-setting and self-initiated development planning to attain those goals. Adequate counseling and assistance in career planning may or may not be provided. The form of counseling may range from advice given by the individual's superior to formal seminars conducted by specialized teams.

c. The more formal programs appear to have the strong support of top management. While designed to satisfy the needs of the corporation, they also provide sufficient flexibility to accomodate varying individual skills, traits, and experience. Most of the programs are work-oriented and provide the individual with the opportunity to learn by doing. They may range in length from six months to several years, and therefore represent a significant investment by the company. Individuals selected for participation in the development program have a history of exceptional performance and have been identified as having high potential. The more formal programs appear to include an excellent basis for evaluating and correcting where necessary, individual strengths and weaknesses.

d. Less formal development programs are also based on self-initiated career planning and rely heavily on rotational work assignments, short seminars or in-house courses of instruction, and encouragement of the individual to take advantage of outside improvement opportunities.

These are the salient points which may be pertinent to creating a comprehensive development plan for Navy project managers. The next section will trace the history of what the Navy has done to date to create and implement such a plan.

C. NAVY EFFORTS IN PROJECT MANAGER CAREER DEVELOPMENT PRIOR TO PRESENT

1. Background

The Navy first adopted project management as an organizational form in the middle 1950s with the establishment of the Special Project Office (now Strategic Systems Project Office) and the Surface Missile Systems Project Office, both reporting directly to the Under Secretary of the Navy. The apparent success of these ventures, an increasing defense budget, United States involvement in Southeast Asia, and an apparent decentralization of the functions of the Office of the Secretary of Defense during the Laird-Packard administration helped create an environment in which the concept of project management flourished. By the late 1960s, the Navy had established almost seventy project offices, each reporting to either the Chief of Naval Material (CNM) or the Commander of one of the Navy's Systems Commands. Apart from the early notable successes, the proliferation of designated projects and the suppression of these projects to lower organizational levels brought a number of failures and sufficient examples of mismanagement to warrant public criticism of military methods of acquiring new weapon systems. By early 1969, it was apparent to the Navy's top management echelons that

one of the factors at the root of the system acquisition problem was the quality, training and experience of personnel performing the project management function. Efforts were begun to improve the quality of project management in the Navy. As will be seen, high-level interest on the part of Department of Defense officials has served to give sustaining impetus to this effort.

2. The Need for Improved Project Management

In 1969, the system acquisition management "problem" became the subject of a significant amount of high level Department of Defense (DOD) correspondence. This interest has been expressed at the level of the Secretary of Defense, the Secretary of the Navy (SECNAV), the Chief of Naval Operations (CNO) and the Chief of Naval Material (CNM). The Chief of the Bureau of Naval Personnel (CHBUPERS) is greatly involved, as the necessary alteration of career patterns and the provision of high quality personnel to fill project management billets is his direct responsibility. The following sections are divided so as to separate the Department of the Navy's efforts from those of DOD officials in higher echelons. Although some loss of continuity results from presenting the material in this manner, the dialogue is organized chronologically within each section.

a. Department of Defense Emphasis

Then Deputy Secretary of Defense David Packard issued a memorandum to the secretaries of the Armed Forces on 31 July, 1968 in which he cited what he considered to be key problems with weapon system acquisition, provided guidance relevant to possible solutions, and solicited comments on each service's plans to implement the guidance. The problems highlighted were:

Overly optimistic cost estimates.

Excessive program changes during both the development and production phases.

Inadequate identification of risk and incomplete contract definition.

Lack of adequate prototyping, test, and evaluation prior to production.

On 25 November, 1969, another memorandum was issued which forwarded the conclusions and recommendations of the Defense Science Board's 1969 Summer Study. The memo also requested views and suggestions on the findings and recommendations, with particular emphasis on incentives for project management performance and a system for measuring individual performance in project management. One of the key recommendations of the Summer Study Panel was as follows:

> We recommend, therefore, serious consideration of establishing a career specialty of weapon systems acquisition management. A major increase in the recognition, the status, and the opportunities in program management may be necessary to attract and retain a larger share of the most capable career officers and senior civilians that we wish to see committed to this activity. [5]

On 28 May 1970, Secretary Packard issued his now famous "Policy Guidance on Major Weapon System Acquisition" Memorandum to the Services. In that section of the memo which applies to management, he said,

> Management in the Services will be improved only to the extent that capable people with the right kind of experience and training are designated to manage these major programs - - in fact all programs..... If capable people are going to be willing to undertake these important program management assignments, ways must be found to give

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[5] Deputy Secretary of Defense Memorandum for the Secretaries of the Military Departments, 25 November, 1969, p. 2. Enclosure.

them some incentive to doso. Program managers must be given more recognition toward career advancement in all of the Services, and good managers must be rewarded just as good operational people are rewarded.[6]

These memoranda serve to highlight the interest in improving the quality of project management in the Services that existed in the Office of the Secretary of Defense.

b. Department of the Navy Emphasis

In early 1969, a dialogue began between the CNO, the CNM, and the CHBUPERS concerning ways of attracting and retaining top quality personnel to the field of system acquisition management. On 8 October, 1969, the CNM summarized the problem in a memorandum to the Vice Chief of Naval Operations (VCNO):

> The adverse publicity and congressional criticism of military, and more specifically Navy, Procurement practices during recent months has re-emphasized the fact that one of the Navy's major concerns must be that of training officers who will become the Weapon Systems Acquisition Managers of the future, or assume major procurement management responsibilities within the Navy. The training of these officers cannot be confined to the contracting phase of the procurement process but must provide knowledge of all aspects of the weapons acquisition process, i.e., planning, contracting, and contract administration. This training should not be provided to just Supply Corps officers alone, but must be provided to Restricted and Unrestricted Line Officers as well if we are to have sufficient numbers of qualified officer personnel to perform effectively the development, acquisition and support of our increasingly complex and costly weapon systems.[7]

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[6] Deputy Secretary of Defense Memorandum for Secretaries of Military Departments, et al, Subject: Policy Guidance on Major Weapon System Acquisition, 28 May 1970, p. 2.

[7] Chief of Naval Material Memorandum for the Vice Chief of Naval Operations, Subject: Procurement/Weapon Systems Acquisition Officer Personnel Career Requirement, 8 October 1969, p. 1.

Other points made in the same memorandum include:

> In depth training and the alteration of traditional career patterns are required to satisfy the Navy's future needs.
>
> Officers selected for this effort must be top performers.
>
> Action is required to upgrade Weapon Systems Acquisition Management (WSAM and recognize it as one of the most important career specialties.[8]

The memorandum closed with these recommendations:

> That a career pattern in Procurement/Weapon Systems Acquisition be established for both line and staff corps which will ultimately qualify an officer for consideration for Flag rank in the same manner that major fleet command and major supply specialty positions do now for the Line and Supply Corps.
>
> That the CNM be designated as the career sponsor for the Procurement/Weapon Systems Acquisition Management field.
>
> That we press for recognition of the Procurement/Weapon Systems Acquisition field as an important specialty of our line and staff officers.
>
> That the Chief of Naval Material and Chief of Naval Personnel be tasked jointly to develop action plans for the Chief of Naval Operations' approval.[9]

The memorandum from CNM was answered by one signed by the Vice Chief of Naval Operations on 19 November 1969. Referring to the 8 October memorandum, he said:

> Development of a community of Weapon Systems Acquisition Management officers per reference (a) may not be feasible due to the vast range of capabilities implicit in the description. The concentration of twelve to fourteen years in Weapon Systems Acquisition Management billets in a period of about twenty-five years commissioned service is not consistent with the concept of an unrestricted line officer subspecialist with one or two tours in a subspecialty and no qualifying tours other than graduate school. Assuming that this time limitation can be overcome, the very general specifications offered in reference (a) appear to describe an individual oriented toward economic and engineering skills vice the tactical and strategic skills of naval warfare.

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[8]Ibid, p. 3

[9]Idim.

> Because of the anciliary considerations implicit in the idea I feel that it should be given more than cursory consideration in terms of billets which might be identified, career rotation patterns, tour lengths, treatment by selection boards, appropriate graduate education, interface with other areas of subspecialization, and so forth. By copy of this memorandum, the Chief of Naval Personnel is requested to conduct an informal staff study of the matter utilizing such assistance as may be nominated by the Chief of Naval Material, reporting to me on completion of the study.[10]

On 2 December, 1969 (one week after Secretary Packard forwarded the Summer Study results to the Services) the Chief of Naval Operations sent a memorandum to the Chief of Naval Personnel which made the following requests:

> Determine from the Chief of Naval Material his best estimate of the number of Project Managers in each specialty we are likely to require during the next decade.
>
> Review the syllabus of the Management Course given by the Postgraduate School in Monterey and ensure that it is focused on the specific expertise required by a Navy Project Manager operating in Washington, D. C.
>
> Make maximum use of the Project Management Course at the Defense Weapons Systems Management Center, Wright-Patterson Air Force Base.
>
> Reorient, as necessary, career personnel planning so as to provide adequate formal, as well as practical, training before officers are assigned to a specific project.
>
> Through BUPERS publications, as well as other means that we can devise, take steps to focus attention on the importance of the Project Manager and the opportunities available to those who prove, by performance, that they are experts in their specialty.

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[10] Vice Chief of Naval Operations Memorandum for the Chief of Naval Material, Subject: Procurement/Weapon Systems Acquisition Officer Personnel Career Requirement, 19 November 1969.

> After you have worked out a tentative plan to achieve the desired results outlined above, I would like to confer personally with you, the Vice Chief of Naval Operations, and the Chief of Naval Material and firm up the action necessary to develop true professionalism in the area of weapons systems development and acquisition. [11]

On the same day, the Chief of Naval Personnel, referring to the 19 November VCNO memo, requested his Assistant Chief for Plans and Programs to conduct the required investigation in the form of an informal staff study, utilizing such support from offices of the Bureau of Naval Personnel and the office of the Deputy Chief of Naval Operations (Manpower & Naval Reserve)[12] as may be required, and such support from the staff of the Chief of Naval Material as may be made available.[13]

On 11 December, the Chief of Naval Material designated his Deputy for Procurement and Production (Captain, now Rear Admiral R. G. Freeman, III), and the Commander of the Naval Electronic Systems Command (Rear Admiral J. E. Rice) as his representatives from the unrestricted line and restricted line respectively. He also informed the Chief of Naval Personnel that the Supply Corps would be represented by Captain (now Rear Admiral) E. E. McMorries from the office of the Assistant Secretary of the Navy (Installations and Logistics).

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11 Chief of Naval Operations Memorandum 335-69 for the Chief of Naval Personnel, Subject: Project Managers; Training of, 2 December 1969, pp. 1-2.

12 The Chief of Naval Personnel holds this office on an additional duty basis.

13 CHBUPERS Memo Serial A11/670 dated 2 December, 1969, addressed to the Assistant Chief for Plans and Programs.

3. Navy WSAM Study of 1969-1970

a. Genesis and Methodology

High-level interest seemed to provide impetus to internal Navy efforts to come to grips with the problems associated with improving the quality of Navy project management. At the request of the VCNO, an informal study group was created under the direction of the Chief of Naval Personnel. The group was comprised of several captains from within the Bureau of Personnel and representatives previously mentioned from the Chief of Naval Material. The immediate requirement was to respond to actions requested by the CNO and VCNO memoranda, and the 25 November memorandum from the Deputy Secretary of Defense. The goals of the study groups effort were consolidated from the three memoranda as follows:

(1) Determine how to:

(a) Structure training and education for project managers.

(b) Develop means to attract, develop and retain project managers.

(c) Create incentives for project manager performance.

(d) Measure individual project manager performance.

(e) Increase project managers' authority.

(f) Make maximum use of the Project Management Course at Wright-Patterson Air Force Base.

(g) Focus attention on project management through Navy publications.

(2) Identify:

(a) The specialty designators of officers to be utilized as project managers.

(b) The number of project managers required by the Navy during the next decade.

(3) Examine and recommend approaches to the questions of:

(a) Establishing a career specialty in Weapon Systems Acquisition Management, including career rotation, tour lengths, interfaces with other areas of sub-specialization, etc.

(b) Ensuring equitable treatment of project managers by promotion selection boards, including Flag.

(c) Using Civilians instead of military officers as project managers.

One of the vehicles used by the study group was a survey of Project Managers and Weapon Systems Acquisition Managers by questionnaire. Although the questions asked in the survey related to several goals of the study group, its primary objective was to obtain the views and experience of those actively engaged in system acquisition activities as to what makes a good Porject or Weapon Systems Acquisition Manager, with particular emphasis on training and educational requirements. One hundred thirty-three (133) responses to the questionnaire were received by the study group. Selected results from the survey are presented in Appendix B.

b. General Results and Conclusions

A progress report on the WSAM study was forwarded to the Chief of Naval Operations on 4 March 1970. The final report was forwarded to the CNO by the Chief of Naval Personnel on 28 April, 1970 and is included in Appendix C. The report presented summary recommandations, with attached enclosures dealing with each key area in depth. The major areas of concern, and the general conclusions associated with each were listed as follows:

(1) "Major Command" Equivalency for Project Managers. It was determined that some Project Manager positions should be designated as "equivalent to a major command," and that such a determination should be made by the Chief of Naval Personnel upon the recommendation of the Chief of Naval Material.

(2) Selection, Ordering and Tour Lengths for Project Managers. Project Managers should be selected by board action within the Bureau of Naval Personnel with CNM and Systems Command personnel in the Bureau of Personnel included as members of the board. Selectees for Project Manager positions should be ordered to the billet via the Defense Weapon Systems Management Course unless they had previously attended. Initial tour lengths for Project Managers should be established as three years, with extensions beyond this period depending on the status of the project.

(3) Adequacy of Functional WSAM Training. The Defense Weapon System Management Course at Wright-Patterson Air Force Base was judged to be basically adequate. While some changes in the course content were deemed to be desirable, attempts to identify changes that would satisfy all potential users were unsuccessful. It was determined that Navy quotas to the course had been fully subscribed to in the past. It was felt that implementing the procedure in paragraph (2) above would provide more immediate utilization of the training provided by the course.

(4) Postgraduate Education for Project Managers. The Management curriculum at the Naval Postgraduate School was reviewed and it was determined that the Material Management electives should be strengthened and oriented so as to provide more emphasis on Weapon Systems Acquisition. In addition it was reported that the Superintendent of the Postgraduate School was developing a specific educational program in support of project management consisting of formal education in engineering, science, or mathematics followed by graduate education in the field of management, business administration, or industrial engineering, it was considered likely that such a curriculum would attract many competent officers who were not necessarily motivated for engineering or science programs.

(5) Project Management Subspecialty. The opinion survey revealed that both warfare specialists and restricted line specialists felt that experience in project management associated activities was a major ingredient in producing officers who were qualified for top project manager positions. Further, it was felt that the required experience base could only be developed if the appropriate billets were identified and if the right officers were assigned to these billets in sequence within the framework of approved career patterns. An examination of the billet structure of the Navy was conducted which considered specifically those billets at all shore commands in the grade of Captain, Commander, and Lieutenant Commander. The analysis included consideration of the following factors:

> Weapon Systems Acquisition Management is not discreetly and uniformly defined, as is an area of endeavor in engineering or science.
>
> A variety of billets and activities associated with WSAM exists outside the Systems Commands' Headquarters.
>
> Neither the billets associated with WSAM nor the personnel in training for qualification as project managers were uniquely identified at the time of the study.

The study group concluded that about ten percent of the unrestricted line shore assignments were associated with WSAM. Although some anomalies existed in certain warfare specialties and at some grade levels, it was felt that the Navy could develop, through a coordinated series of assignments, sufficient officers with the proper amount of warfare expertise, education, and WSAM experience from whom project managers could be selected.

After highlighting these conclusions and recommendations, the Chief of Naval Personnel stated that, if the CNO approved them, implementing actions would be taken.

c. Post-Study Dialogue and Some Dissenting Opinions

The final report was forwarded to the CNM for his endorsement by the Chief of Naval Personnel. It was circulated to the Systems Command Commanders for comment prior to this endorsement, which was effected on 10 June, 1970 (Appendix C). After receipt of the report, it was circulated within the office of the CNO for comment in preparation for constructing the reply. During the staffing phase at both of these headquarters levels, it became apparent that the recommendations of the study group would not be received without question. Some of the dissenting opinions expressed by high ranking officers commenting on the report related to the following factors:

(1) It was felt by some that the report concerned itself excessively with the creation of a practical career pattern for unrestricted line officers, to the exclusion of the restricted line and staff corps. It was further felt that such treatment might imply that the restricted line and staff corps, which constituted about two-thirds of the WSAM community at the time, were being omitted from any career planning pattern. Although this was certainly not the intent of the study, the emphasis on unrestricted line career patterns can not be denied, and probably resulted because creation of a WSAM subspecialty for the unrestricted line officer poses the more radical departure from traditional career patterns of the three groups being considered. Whereas it would not be detrimental to a restricted line or Supply Corps officer's career to remain in a WSAM associated billet for three years or more, the unrestricted line officer is required to rotate to sea duty assignments every two years to avoid jeopardizing his promotion potential.

(2) The emphasis on managerial, as opposed to technical education aroused some concern. Some felt that the program being developed at the Postgraduate School might prove so attractive as to lure officers away from technical curricula, to the detriment of providing adequate technical talen in general, and the restricted line in particular. While some felt that the emphasis should be on managerial education, as management problems seemed to be the most serious ones and the ones most frequently criticized in Navy programs, still others considered that a balance of both managerial and technical expertise was required. Another popular conceptwas that the skills required of the project manager change as the project itself evolves through the design, development, test, and production phases with technical skills predominating during the early stages and managerial skills becoming more important as the project matures.

(3) There was some opinion expressed that project management should not be established as a subspecialty of the unrestricted line, the primary reason being that it would offer too attractive an alternative to technical subspecialties and that unrestricted line "P-Coded" billet requirements which were not being met at the time of the study would be placed further in arrears. Another concern was that the recommendation was premature and should be held in abeyance until requirements were more clearly defined. The consideration in this case was the danger of creating too many project managers and thereby draining too many top-quality officers from other Navy needs. It was also argued that it had not been proven that unrestricted line officers who were WSAM subspecialists could and would serve about three years in project management or related billets in both Lieutenant Commander and Commander grades while still maintaining their

warfare specialty. The counter to this argument may be found in a study that was made by Rear Admiral Rice after the WSAM study. In examining the career patterns of two hundred twenty-eight (228) unrestricted line Flag officers, he found that twenty-two of them (9.7%) had served eight years or more in material associated billets following postgraduate education. This led him to conclude that it was possible for about ten percent of the unrestricted line officers to follow career patterns which were "material oriented" when ashore and still have reasonable opportunity for promotion to Flag rank. He further stated that it... "Certainly indicates that with official recognition of this pattern variation (not a particular sub-specialty), and instruction to detailers and Selection Boards, at least 10% of URL Officers could work (and survive as a URL Officer) in the material business to the extent necessary to be well qualified and serve as Project/Weapons Acquisition Managers."[14]

(4) Another source of disagreement was the concept of designating project manager billets as equivalent to a major command. Basis for the objections ranged from the thought that it was inconceivable that any assignment for an Unrestricted Line Officer could be considered equal to a major command at sea to uncertainty as to whether selection for a position so designated would eliminate an officer from consideration for a major command at sea.

(5) The final major point of contention was the recommendation to select certain project managers by board action in the Bureau of Naval Personnel. The concern expressed here was not so much whether it should

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[14] Commander, Naval Electronic Systems Command Memorandum Serial 82-00 for the Chief of Naval Material, Subject: Analysis of Career Patterns of URL Officers on Present Flag List for Naval Material Command Experience, 11 May 1970, p. 2.

be done, but how it should be done. In this regard several proposals were made as to the membership of such selection boards and the frequency of the selection process.

In summary, the general thrust of the study received support which ranged from simple acceptance to enthusiastic endorsement. There was some disagreement, however, with several of the procedures by which the report recommended implementation of its objectives. Some comments were also received which served to emphasize certain of the report's recommendations. Specifically, several of the commenters pointed out the absolute necessity of encouraging the Secretary of the Navy to provide guidance to Flag Selection Boards which stressed the need for selection of officers in the systems acquisition field, and the recognition of the importance of this field by the boards. Another recommendation evolved from the considerable emphasis placed on creating a realistic career pattern for the URL officer by the study. It was recommended that efforts be made to broaden the backgrounds of Restricted Line and Staff corps officers by assigning them to tours of duty in URL billets and thus permit them also to bring a measure of user/operator experience to the system acquisition process.

4. Implementation of Study Group Recommendations

On 11 August, 1970, the Vice Chief of Naval Operations signed a memorandum from the CNO to the Chief of Naval Personnel which concurred in the recommendations of the study group subject to some specific changes in the implementing procedures. The title Major Project Manager would be used to identify project managers selected by board action. The Major Project Manager Selection Board would include representatives from OPNAV, BUPERS, and the Naval Material Command. Selection of an officer for a Major

Project Manager billet would not exclude that officer from consideration for a major sea command. The Chief of Naval Material would nominate MPM billets and forward the nominations with the project charter to the Chief of Naval Operations (OP-01) for approval. Establishment of a subspecialty in project management was to be implemented upon approval of the proposed curriculum at the Naval Postgraduate School. Educational backgrounds of project managers should include both technical and management or industrial engineering. Functional training should follow the educational backgrounds, and the following courses should be utilized: Industrial College of the Armed Forces, Advanced Management Program (Havard), Defense Weapons Systems Management Center, Program Management Development Course (Harvard). It was further recommended that the CNM establish a baseline course within the Material Command. In closing, the Memorandum stated, "... the time has come to provide the stimulus and changes necessary to formulate and implement a viable program to probide a more professional status and greater recognition to personnel involved in major project management."[15]

a. Enhancing the Project Manager Postion

In the three years that have lapsed since issuance of the implementing CNO memorandum, much has transpired in the Weapon Systems Acquisition Management field which relates to career development. The most immediate change took the form of enhancing the project manager's position so as to make it more attractive to top quality officers. Measures taken to date include selection fo Major Project Managers by board action, designation of major projects and certain other system acquisition associated

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[15]Vice Chief of Naval Operations Letter Serial 13118P10 to the Chief of Naval Material, Subject: Career Development and Selection of Project Managers, 11 August 1970, p. 4.

billets as command equivalents, increasing both the promotion opportunity of project managers and the percentage of project manager billets held by Flag officers. A concentrated effort has also been made to eliminate some of the more adverse aspects of the project managers' job by trying to provide him with more real authority, eliminate or minimize the layers of management between him and the Secretary of the Navy, and shield him from external forces which place frivolous and meaningless demands on his time.

b. Project Management as a Subspecialty

Two policy directives have been issued which create, in effect a subspecialty in project management. OPNAV Instruction 1211.8, issued on 19 January, 1972, provided policies covering the manpower aspects of weapon systems acquisition, and BUPERS Instruction 1040.2, issued on 30 May, 1972, established the Weapon Systems Acquisition Management Program and published application procedures for officers desiring to participate.

The first Weapon Systems Acquisition Management Subspecialty Selection Board met in October of 1972 to select and designate subspecialists from the Aviation Community. The guidelines used by the board for the selection process are shown at Appendix D.

c. Educational and Training Changes

The Systems Acquisition Management Curriculum was implemented at the Naval Postgraduate School, and the first class of officers commenced study on 16 September, 1972. The Defense Weapon Systems Management Course was moved by the Secretary of Defense from Wright-Patterson Air Force Base in Dayton, Ohio, to Fort Belvoir, Virginia, and expanded in length and content. Additional short, functional training courses in system acquisition related areas were created and began operation in the Washington area. Recently, some of these courses have been made mobile so as to provide on-site training to personnel in field activities.

d. Managing the Managers

In August of 1971, the Director of the Officer Distribution Division in BUPERS formally established the position of "Assistant Director for Subspecialty Management," with specific responsibilities which included:

> Developing division policies regarding community size, criteria of selection and evaluation of development paths to insure the existence of viable communities.
>
> Insuring community continuity, including promotion equality, and establishment of billet priorities for optimal use of resources.
>
> Monitoring assignment of all WSAM sub-specialists.

A "WSAM Manager" was included on the staff of the new assistant director. Although the tasks assigned the new office were relatively clearcut, accomplishing those tasks has proved to be extremely difficult, with the result that a complete and viable WSAM program has not yet been implemented. A recent reorganization of the Bureau of Personnel has relocated this office as a part of the Officer Professional Development Division (PERS-B4) and renamed it "Community Management (PERS-B43)." In the absence of early guidance in this area, some of the restricted line communities drew up and implemented plans to assist their people in career planning. A good example of this is the publication, Engineering Duty: A Career Perspective (NAVSHIPS 0900-070-1010), issued jointly by the officer code advisors for the Engineering Duty (Ship Engineering) officer group in April 1972. The book is a career planning and counseling aid. Chapter V, Career Planning, is presented in Appendix E. It will be noted that the career planning chapter includes a WSAM option, and that the material is presented in much the same manner as some of the programs used in private industry.

This section has served to provide the reader with background information on the nature of project manager career development in the Department of the Navy by tracing some of the history of the Navy's attempts to improve the quality of its project management. It sets the stage for the researchers' efforts to examine the status of the program today, survey opinions of the program and provide constructive recommendations which might be used to improve the quality of career development in this important field.

III. METHODS OF STUDY

A. INTRODUCTION

When the topic for this thesis was selected, three methods of study were chosen: mail survey of existing programs as background for the study of the development of naval project managers, mail questionnaire specifically addressing questions raised in the background survey, and personal interviews conducted in Washington, D. C. The first method has been treated in Section II. This section will describe the second and third methods.

B. QUESTIONNAIRE

The original idea of distributing two questionnaires - one to Navy addressees and the other to Defense Industry, Army and Air Force - was dropped as a result of the returns from the background survey. It was doubtful that either Non-Navy source would provide enough information not already forwarded in the background survey to justify the second questionnaire.

While the questionnaire administered in 1969 had been answered mostly by project personnel, it seemed important to get the opinion of project manager development from the field activities involved in systems acquisition as well. The field activities chosen were the Naval Plant Representatives (NAVPROS), Supervisors Shipbuilding Conversion and Repair (SUPSHIPS), Naval Aircraft Rework Facilities (NARFS), the research and development laboratories, and the Operational Test and Evaluation Force (OPTEVFOR) activities. In Washington questionnaires were sent to the Systems Commands project managers and deputies, to personnel and functional branches of the

Systems Commands, to the warfare and research and development branches of OPNAV, to addressees in the Procurement and Production branch of the Naval Material Command, and to the Officer Professional Devlopment section of the Bureau of Naval Personnel. A total of 240 questionnaires were sent with a promulgation letter from RADM R. G. Freeman, III, USN - Deputy Chief of Naval Material (Procurement and Production). This letter contributed significantly to getting the large return (75% in 30 days) of questionnaire results.

The questionnaire was designed to investigate three questions:

1. How acceptable to those in systems acquisition are the guidelines presented to the first Weapon Systems Acquisition Management (WSAM) Subspecialty Board?

2. Is there a consensus as to the type of educational background, functional training and on-the-job experience which should be used to prepare a Naval officer to become a project manager?

3. Has there been a change of opinion in this matter since a questionnaire along these lines was administered in 1969?

It was recognized that the groups answering the two questionnaires would not be the same, so that any comparison between the two sets of data would not be strictly analytic. It was also understood that those who answered the second questionnaire would not have access to the results of the first or to the guidance given the Selection Board, but the results of both were used as the basis for the questionnaire.

Three types of questions were asked in the questionnaire. The criteria used by the Selection Board and the various combinations of education, functional training and experience to be used to distinguish proven sub-specialists were used in structuring questions ten to seventeen, the ranking questions. The conclusions from the 1969 study and statements

taken from the Navy background survey, discussed in Section II. C., formed the basis for the agree-disagree questions (18 to 40). Thirdly, part of the 1969 questionnaire was changed enough to make it applicable to field as well as Washington activities, and these were included in the open-ended questions, part three of the questionnaire.

Because the question of detailed systems-acquisition-related billets had not been settled in the 1969 study or since, two billet-oriented questions were included in the open-ended section. The first of these questions sought to identify those billets which had been most beneficial to the respondent in his preparation for his present assignment in systems acquisition. The second question asked the respondent to identify the billets in his organization, presently filled by Naval Officers, which should be coded as systems-acquisition billets.

The questionnaire was designed so that the answers to the first two types of question (ranking and agree-disagree) could be analyzed using a computer. The third section was left open-ended so that the respondent would have the opportunity to add his own comments to the structured questions of the first two parts of the questionnaire. The individual responses were considered as important as the overall results of the group.

C. PERSONAL INTERVIEWS

The third and final method used in this study was the face-to-face interview, conducted in Washington, D. C. These interviews were scheduled for three reasons:

1. First the interviews were important so that the results of the first two methods could be verified. In order to understand the real-life circumstances which act as constraints on any development program the Navy might wish to implement, it was necessary to interview people who were involved in the everyday problems of systems acquisition in Washington.

2. Secondly, the interviews were intended to followup on issues raised in the questionnaire in open-ended questions. For this reason these questions and their answers were the principal factors used in selecting the parties to be interviewed.

3. Thirdly, a real effort was made to get a balanced point of view. Because the results of the questionnaires indicated that the unrestricted and restricted line officers had different opinions about certain facets of a Weapon Systems Acquisition Management (WSAM) development program, the interviews were scheduled in Naval Material Command Headquarters, the four Systems Commands, the Bureau of Naval Personnel and OPNAV. At the same time, a balance of unrestricted and restricted line officers was sought. The organizations and people who were interviewed are listed in Table I.

TABLE I

LIST OF INTERVIEWS

Ship Systems Command	Engineering Duty Officer Detailer
	Project Manager, DD 963 Project
	Project Manager, Trident Project
	Project Manager, AAW Ships Acquisition Project
	Project Manager, CVAN Project
	Director, Cruiser-Destroyer Logistics Div.
Ordnance Systems	MK 48 Torpedo Project
	Director, Systems Control Division (ORD 551)
	Ordnance Duty Officer Detailer (ORD 061)
Air Systems Command	Project Manager, E2C Project
	Project Manager, Harpoon Project
Electronic Systems	RADM Joseph E. Rice, USN
	RADM R. J. Schneider, USN
Naval Material Command	RADM R. G. Freeman, III, USN

IV. ANALYSIS OF RESULTS

A. ANALYSIS OF QUESTIONNAIRE RESULTS

1. Introduction

As was explained in the previous section, the questionnaires were sent to addressees across the broad spectrum of systems acquisition. One hundred eighty replies were received of which 173 were considered responsive. The other seven were either returned blank or with a statement that no one at that address was qualified to answer the questions.

The different parts of the questionnaire were used for different purposes and subjected to different types of analysis. The ranking and agree-disagree questions were analyzed using a computer. The comments from the open-ended questions were used to prepare for the Washington interviews. The two billet questions were used in the preparation of the list of Naval Officer Billet Classifications (NOBC's) and billets. Although all forty questions were subjected to computer analysis, ten questions proved to be more significant. The details of the analysis of each of these types of questions can be found in the various appendices indicated in Table II. All the computer results are listed in Appendix G. The computer results for the ten significant questions and for the background of the respondents are given in the "computer output" section. Some of the more interesting comments from the open-ended section are given in Appendix H.

TABLE II

RESULTS OF QUESTIONNAIRE ANALYSIS

APPENDIX F.	QUESTIONNAIRE
APPENDIX G.	OVERALL RESULTS QUESTIONNAIRE ANALYSIS
APPENDIX H.	SELECTED QUOTATIONS FROM QUESTIONNAIRE
APPENDIX J.	SELECTED LIST OF NOBC'S
APPENDIX K.	SUGGESTED BILLET LIST
COMPUTER OUTPUT	(BACKGROUND AND SIGNIFICANT QUESTIONS)

2. Background of Respondents

The statistics derived from the nine background questions give an interesting picture of the personnel who are involved in systems acquisition in Washington and the field. The address list tried to reach every area of Weapons Systems Acquisition Management (WSAM) and, although only 75% responded, each of the areas was represented to some degree. The background of the respondents is summarized in Table III, but certain results deserve special comment.

a. An almost equal number of restricted and unrestricted line officers responded.

b. Over 50% of the respondents had both Washington and field experience, with a greater percentage of restricted line officers having had both assignments.

c. Whereas the restricted line officers answering the questionnaire were spread fairly evenly across the warfare specialties, the unrestricted line officers were concentrated primarily in the aviation area (50%).

d. The restricted line officers had a larger amount of experience in systems acquisition arena (69.1% had over eight years experience) and a greater concentration in field activities (48.8%).

TABLE III

BACKGROUND OF RESPONDENTS

		URL	NO.	(PCT)	RL	NO.	(PCT)	Civilian
1.	Present Assignment							
	Personnel		4	(2.4)		0	(0.0)	
	Technical Requirements		11	(13.9)		6	(7.3)	
	Project Staff		39	(49.4)		36	(43.9)	
	Field		15	(19.0)		40	(48.8)	
	Operation Requirements		10	(12.7)		0	(0.0)	
2.	Grade							
	LCDR		3	(3.8)		11	(13.4)	
	CDR		20	(25.0)		24	(29.3)	
	CAPTAIN		50	(62.5)		46	(56.1)	
	FLAG		7	(8.8)		1	(1.2)	
	CIVILIAN							7(100.0)
3.	Area of General Knowledge							
	Surface		20	(25.0)		23	(28.4)	
	Subsurface		13	(16.3)		11	(13.6)	
	Aviation		40	(50.0)		28	(34.6)	
	Electronics		4	(5.0)		12	(14.8)	
	Ordnance		3	(3.8)		7	(8.6)	
4.	Area of Special Knowledge							
	Technical		21	(28.0)		29	(35.4)	
	Contracting		0	(0.0)		0	(0.0)	
	Funding		2	(2.7)		0	(0.0)	
	Test		3	(4.0)		1	(1.2)	
	Project Management		49	(65.3)		52	(63.4)	
5.	Highest Level of Education							
	BS Technical		20	(28.6)		5	(6.2)	
	BS Non-Technical		7	(10.0)		1	(1.2)	
	MS Technical		26	(37.1)		57	(70.4)	
	MS Non-Technical		11	(15.7)		10	(12.3)	
	Dual Masters		6	(8.6)		8	(9.9)	
6.	Time in WSAM Areas							
	0 - 2 Years		9	(11.3)		0	(0.0)	
	2 - 4 Years		18	(22.5)		8	(9.9)	
	4 - 6 Years		14	(17.5)			(12.3)	
	6 - 8 Years		11	(13.8)		7	(8.6)	
	Over 8 Years		28	(35.0)		56	(69.1)	
7.	Location of Experience							
	Washington		17	(21.5)		4	(4.9)	
	Field		20	(25.3)		16	(19.5)	
	Both		42	(53.2)		62	(75.6)	

e. The statistics for the electronics and ordnance divisions of Area of General Knowledge (Question 3) was smaller because respondents who answered surface-electronics or surface-ordnance were listed as surface. Special preference was given to the three warfare specialties.

f. Because of the educational requirements to become a restricted line officer, that community has a decided edge in educational background. It is also interesting to note that the restricted line has no monopoly on technical education and unrestricted line no corner on non-technical training.

3. Introduction to Questionnaire Analysis

The computer program used to analyze the questionnaire is a form of the Statistical Package for Social Sciences (SPSS) written at Stanford University and included in the IBM 360/67 library of routines installed at the Naval Postgraduate School. This set of routines is particularly well-suited to the analysis of non-parametric data like that obtained from the questionnaire used. Although more sophisticated procedures were available in the SPSS package, the purposes of this questionnaire justified using only the single question frequency analysis and the two question cross-variable analysis.

4. Analysis of General Questions

The results of the analysis of the 31 substantive questions showed that the questions could be divided into two groups, those on which there was substantial agreement between unrestricted and restricted line respondents (herein called general questions) and those which showed disagreement (called significant questions). The statistics from the analysis of these questions are given in Appendix G, and the results are summarized in the text. Where statistical data is given, the percentages refer to the individual question (e.g., 40%, question 18) and cannot be compared with the results for another question. Only the answers most often selected are listed, so that the percentages should not be expected to add up to 100%.

The majority of the questions (21 of 31) shows a consensus between the two groups which supports the conclusions of the 1969 Survey and the guidelines of the 1972 WSAM Subspecialist Board.

a. Substantiating the judgment of the Selection Board the respondents agreed upon the following order of preference for the experience-education combination for the subspecialist:

Two tours operational experience, MS Technical degree
Strong operational experience (3 or more tours) BS Tech.
Two tours operational experience, MS Non-Technical degree
Strong Operational experience, BS Non-technical degree
Two tours operational experience, BS Non-technical degree

b. Their ranking of educational - functional training programs for LCDR/CDR subspecialist showed the same preference for technical training as the Board.

(1) MS Technical degree - Management functional training

(2) MS Systems Acquisition Management - Nuclear Power/ Test Pilot Training

(3) MS Technical degree - no management training

(4) MS Systems Acquisition Management degree - no technical training

(5) MS Non-technical degree - no technical training

c. The unrestricted and restricted line officers could not agree on the first tour assignments but they had the following preferences for the second tour.

(1) Principal Assistant Project Staff (Prior Washington tour)

(2) Principal Assistant Project Staff (Prior Field Tour)

(3) Naval Plant Representative (Prior Washington Tour)

(4) Test Center (Prior Washington Tour)

(5) NARF/Shipyard (Prior Washington Tour)

The respondents showed a decided preference for Washington tours and listed the tours associated with maintenance activities last.

d. The respondents also ranked the jobs on the project staff:

(1) Project Deputy

(2) Technical Director

(3) Production Director

(4) Logistics Director

(5) Project Coordinator (OPNAV)

The production and logistics billets were closely contested with the unrestricted line officers supporting logistics and the restricted line officers production. The fact that the Project Coordinator in OPNAV was listed last shows the respondents' preference for project staff over all other billets for development of project managers.

e. In the area of present project manager education, the respondents felt:

Present education programs are adequate (40%, Question 18).

Formal education in both technical and managerial areas is necessary (70%, 20).

Recent operational experience is important enough to justify 15% URL in Systems Commands (56%, 21).

Team of officers and civilians with operational, technical and managerial backgrounds present best solution (64%, 23)

Development of Project Manager should emphasize teamwork rather than individualism (50%, 38).

Comprehensive functional training program should supplement education programs (60%, 28).

f. In regard to the formulation of a Project Manager Development Program, the respondents decided:

They disagreed that a formal development program was impractical (50%, 22).

They felt a development plan could be personalized for individual subspecialist (53%, 33).

A career development plan for Supply Officers in WSAM should be developed (52%, 31).

Field Activities could be used effectively to develop WSAM subspecialist (62%, 25)

g. The respondents did not believe the present number of projects should be decreased by consolidation into more comprehensive, more specialized staffs (40%, 26).

h. A memorandum written in Naval Air Systems Command suggested that candidates attend Industrial College of the Armed Forces prior to their assignment as project manager. When asked whether they agreed with this hypothesis, the largest percentage of respondents did not (36%, 34). The largest percentage of respondents (68%, 60) agreed that rotation of officers between the field and Washington would help promote mutual understanding of each other's problems and encourage cooperation.

i. During the 1969 survey some of the officers in functional codes complained that all of the concentration on project management was tending to aggrandize project organization to the detriment of the functional organization. The respondents did not agree that a Project Management Development Program had to produce this effect. Nor did they believe that "Project Managers are born and not made."

5. Analysis of Significant Questions

These results have been in substantial agreement with the results quoted earlier in reference to the Subspecialty Selection Board. But the unrestricted and the restricted line officers did not agree (even loosely) on every issue. Often they answered the question as it applied to the general subspecialist. These answers, however consistent with their experience and area of specialization, show the area of difference between the two communities.

a. When choosing a first Washington tour for the LCDR/CDR subspecialist, the respondents made the following selections:

First, both choose project staff

Secondly, both chose type desk for their specialty

For third and fourth choices, URL chose operational requirements and research and development; RL ranked both equally;

For fifth choice, both listed financial mangement.

b. In making their choices of field activities, the two groups again split their ranking:

URL	RL
(1) OPTEVFOR Activities	(1) Naval Plant Representative
(2) Test Center	(2,3) Test Center and OPTEVFOR Activity (tie)
(3) Laboratory	(4) Repair Facility
(4) Naval Plant Representative	(5) Laboratory
(5) Repair Facility	

It is natural that the restricted line officers should choose Naval Plant Representative first, and unrestricted line should choose OPTEVFOR since these choices are commonly considered billets normally assigned to them. It is an indication that any development plan should pay attention to the officer background and give different patterns for the two communities.

c. The same division was evident in the respondents' selection of functional training:

URL	
(1) Financial Management	(1) Financial Management
(2) Logistics	(2;3) Contracting (2 & 3rd)
(3,4) Contracting (3 & 4th)	(4) Production and Quality Assurance
(5) Production and Quality Assurance	(5) Logistics

Neither group of officers would like a financial management billet, but both chose financial-management functional training as their first choice. Thereafter the URL officers choose logistics while RL officers were choosing procurement and contract administration. The first two questions (10 and 11) of the questionnaire attempted to evaluate experience-education combinations for the project manager in development and in production. The purpose of the two questions was to find out whether there were different priorities for development from those for production. Although the respondents chose the same rankings for both questions, the degree of support for the various alternatives differed depending on phase. When asked explicitly whether educational and skill requirements were different for project managers in development and production stages of a project, the choices were:

Question 19	URL	RL
Agree	56.3%	31.7%
Disagree		41.5%

The restricted line officer's belief that skills don't change with the phase of the project is probably connected with his insistence on the importance of technical expertise.

The authors of the Guidelines for the Selection Board recognized the need for the project manager to have both technical and non-technical or managerial training. They assigned highest priority to technical education with managerial functional training. Secondly they chose managerial education and technical functional training provided in nuclear power school and test pilot training. When the respondents were given the chance to choose their own priorities, they split as follows:

Question 24	URL	RL
Agree	52%	
Undecided		30.5%
Disagree		29.3%

The selection of subspecialists to serve in the WSAM area will form a new "subspecialty" community from the unrestricted and restricted communities. At the same time billets now assigned to the restricted line community would be reassigned to the WSAM subspecialists. The questionnaire posed the hypothesis: the development of the WSAM community will harm the existing restricted line specialties. The respondents split their choice:

Question 27	URL	RL
Agree	10.0%	19.8%
Undecided	25.0%	29.6%
Disagree	52.5%	40.7%

d. A question closely related to the harm the new community would cause concerned itself with the necessity for integrating URL line officers into the Systems Commands. In answer to the following hypothesis: Force feeding of top performing unrestricted line officers into Systems Command WSAM billets is necessary, the following response was received:

Question 29	URL	RL
Strongly agree	31.3%	
Agree	42.5%	34.1%
Disagree		40.2%

e. Several of the questions were designed to determine the form and usefulness of the new subspecialty. One question characterized the program as "a regrouping of personnel assets without real benefit." The unrestricted and the restricted line officers responded in different ways:

Question 32	URL	RL
Undecided	36.2%	47.6%
Disagree	41.2%	28.0%

Apparently the unrestricted line officer has more confidence in the new program. A more dramatic difference was apparent when the hypothesis was posed: a good performer could have successive 3 year tours in WSAM billets without hurting his chances for promotion. This question drew opposite responses:

Question 34	URL	RL
Agree		35.4%
Undecided	42.5%	35.4%
Disagree	25.0%	

This question is another example of a group answering for itself rather than for the whole WSAM community. The restricted line officer believes he can face successive tours; the unrestricted line officer is not so sure. From the responses to these questions it is apparent that there are many aspects of career development for project managers which tend to split WSAM personnel into their respective communities. There is no one point of view for the whole WSAM community. This difference of opinion was

apparent when the interviews were scheduled in Washington. Investigating the reason for this difference became one of the principal reasons for undertaking the interviews.

B. INTERVIEW RESULTS

The results of the Washington interviews will be summarized by organizational subdivision, e. g., Systems Command, Naval Material Command Headquarters. The opinions expressed are characteristic of the particular group as represented by the officers who were interviewed. Thus the statements made in the first section represent the point of view of the officers interviewed in the Naval Material Command Headquarters, while those in the second section are characteristic of those interviewed in the Naval Ship Systems Command.

1. Naval Material Command Headquarters

According to those interviewed in NAVMAT, the ability to get a broad, over-all point of view of the project is a necessary ingredient. The requirement for a technically-oriented porject manager varies with the individual project and the phase of the project. Most of our problems today are non-technical in nature. We have been able to come up with the technical expertise, but we have not been able to solve our business problems.

The most effective way to manage a project may prove to be the TRIAD approach: three different types of personnel - unrestricted (operationally-oriented) line officers, restricted (technical-specialty-oriented) line officers and civilian to provide continuity. In the highly technical phase of the project, the Project Manager and the Technical (Engineering) Director should be technically qualified officers. (We have

seen that this does not necessarily mean restricted line officers since many of the unrestricted line officers responding to this questionnaire had the graduate technical training of the restricted line officer). As the project moves toward fleet introduction, the Technical Director should provide the technical qualification while the Project Manager supplies the concern for logistics and operational testing. Getting the right mixture of skills is the purpose of the Project Manager Development Program.

2. Naval Ship Systems Command

According to those interviewed in NAVSHIPS, in Shipbuilding technical expertise and experience is fundamental. The development and production of ship platforms is such a complex task that it makes special demands on the Project Manager. Whereas the usual aircraft or missile system is more or less one system (albeit with many subsystems) the average ship is many systems brought together into one. The complexity of the integration provides problems for the Ship Systems Command which are peculiar to ship acquisition.

The Ship systems Command has made its own attempts to integrate operationally-qualified officers into its projects. Two programs have been instituted to exchange officers between Ships and Ordnance Commands and between Ships and OPNAV. Many of the projects had at least one URL officer on their staffs and the billet of project manager was opened to unrestricted or restricted line officer, whoever is better qualified. The fact that the latter is chosen is due to his superior qualification in shipbuilding while the former was dividing his time between his specialty and subspecialty. It is true that this condition will continue until qualified URL officers are assigned to Ship Systems Command billets to gain the experience they need to make them competi-

tive, but the effect of the recent 25% Washington cutbacks has been to remove the program billets that would help train these officers. There is no longer room for training billets.

Another problem peculiar to Ships which affects Project Manager development is the lack of matrix organization with functional codes which might provide the URL officer a chance to gain acquisition experience. Because of the separation (organizationally and physically) of Ships and Ships Engineering Center, the acquisition organization of the Ships Systems Command is limited to the many projects with comparatively small staffs. Several reorganization plans are under study. It may become necessary to centralize the many small projects into a few major projects, probably one for carriers, one for surface ships and one for submarines. The present organization is limited in its ability to develop project managers.

The Ships project managers have jobs in their projects in which an operationally-qualified officer should help their projects, principally in the areas of logistics and operational test and evaluation. This depends on the phase of the project and is truer in submarines than in surface ships, but the number of billets available limits the flexibility of the project manager in this regard. One project manager had three officers on his staff: Technical Director (RL, Captain) Logistics Director (Supply, CDR), and Test and Evaluation (LCDR, URL). Forced to cut one officer from his staff, it was natural that he should eliminate the unrestricted line officer, even though he was doing a good job and benefiting the project.

In the Ship Systems Command there are two areas in particular where officers can be trained for future acquisition positions. The first type of job is the project officer in the contractor's plant, under the administrative control of the Naval Plant Representative, but working for the Project Manager. This officer gets valuable experience in the field but is also familiar with the problems which concern the project staff. The second type of job is in the logistics division which is organizationally in SHIPS 04 (Maintenance) but which is intimately concerned with the acquisition projects. The project officers in this area get a real appreciation of the down-stream problems which must be considered by the project manager because the logistics division gets the product of the acquisition process.

3. Naval Ordnance Systems Command

For those interviewed in the Naval Ordnance Systems Command there is a greater percentage of unrestricted line officers working on project staffs and in functional areas of Naval Ordnance Systems Command than in Ships. One project had eight officers, of which 5 were URL, 1 staff, 2 RL - Ordnance specialists. What was sought in staffing projects was balance and personal qualifications for the particular job. Many of the URL officers have ordnance engineering backgrounds but this is not essential. In fact the technically qualified officers (URL or RL) with ordnance duty backgrounds can fill the technical billets, while the other URL officers fill the logistics and Operational Test and Evaluation billets. The important thing is to select good people and reward good performance. The present environment does not encourage good URL performers to choose duty in NAVORD, or even in the Naval Material Command, when they could have jobs in OPNAV. A group of

operationally-qualified captains, when asked whether they would advise a front-runner (URL) to seek duty in ORD, replied unequivocally that they would not. The decisions are being made elsewhere because of the layering problem and the rewards are elsewhere as well.

4. Naval Air Systems Command

In the opinion of those interviewed in the Naval Air Systems Command, this command is the strongest in terms of the mixture of different types of officers. This strength springs from two sources. The Air Sytems Command has the largest matrix organization, with functional class desks providing support for the projects, but also a good training ground for the future project manager. Secondly, the aviator (like the submariner) is forced to be more technically qualified in order to operate his aircraft. There is a greater similarity between the type of knowledge the aviator has to have to operate and the type of knowledge he has to have to work with the development of a new aircraft, than there is between the knowledge a ship's captain must have to operate a ship or to produce one. This similarity of knowledge will mean that an Air Systems project will have a greater mixture of "operators" and specialists working together.

Given a choice of billets to support the development of aviation project managers, one project manager listed in order the project staff, the Air functional branch (class desks), project officer or NAVPRO in contractor's plant, and lastly in OPNAV (OP 05). The project manager should have experience in the Naval Material Command prior to taking over the project. This project manager considered his background to be a good pattern: commodity project officer, class desk AIR 05, OPNAV Coordinator, and then project manager. The essential things are good

people, team balance and project control. The NAVPRO is usually junior to some of the functional managers, but he gets a better insight into the problems of the project manager because he has more contact with the contractor.

5. Naval Electronic Systems Command

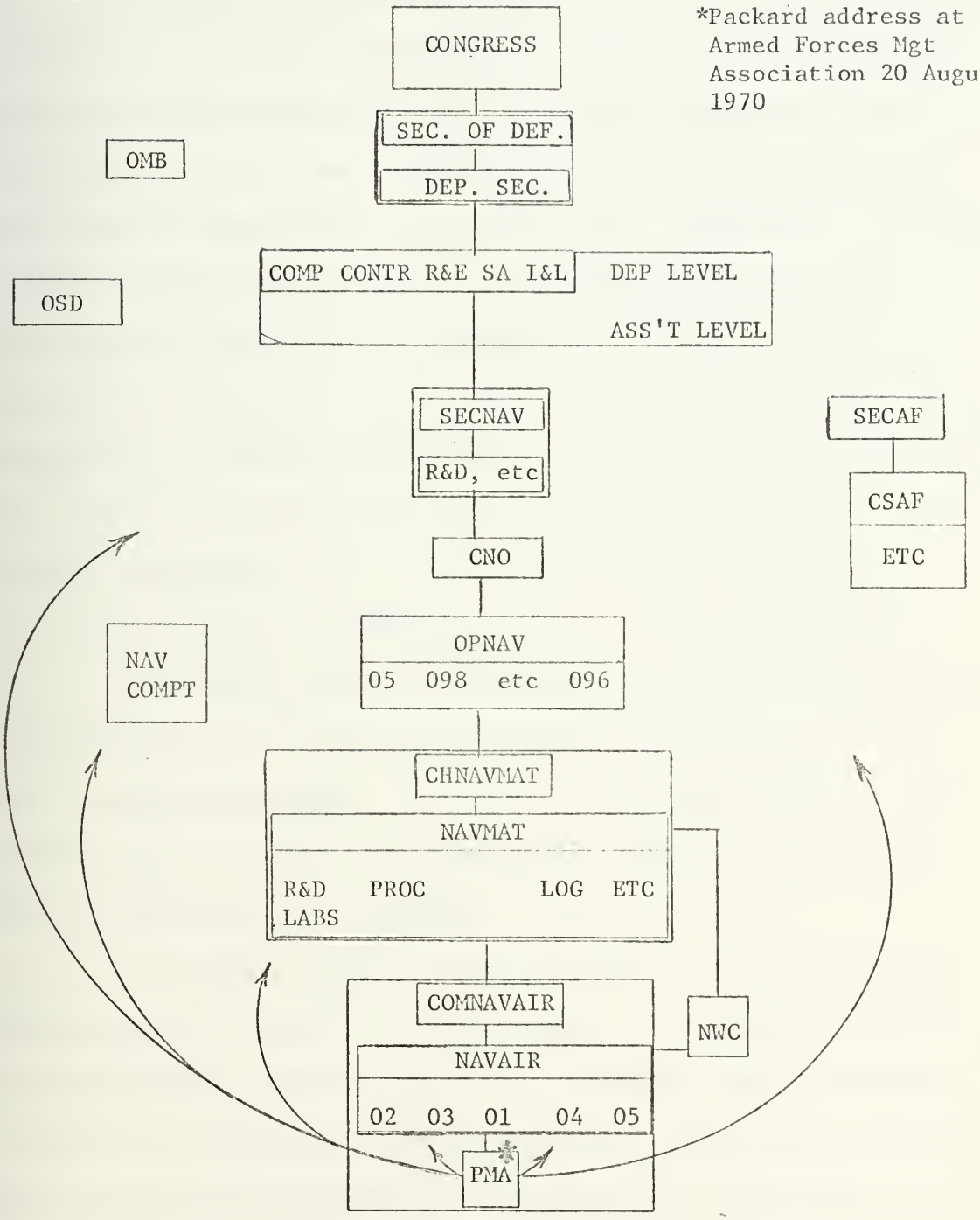
According to those interviewed in the Naval Electronic Systems Command, there is a history of passover of URL officers in the Electronic Systems Command and in the Naval Material Command. These officers in the Electronic Systems Command have had graduate education in electrical engineering or communications engineering and often have come from command assignment. Part of the passover problem may have been personal with the officers assigned, but a part is due to the system which up to now has considered the place of the URL officer to be elsewhere. This problem will have to be solved by the URL community itself.

Another part of the problem is associated with organizational layering. Table IV shows the organizational controls on the project manager (in Air Systems Command). The Systems Commander is on an organizational par with a branch chief in the Department of Agriculture. This stacking of controls tends to promote the impression that the personnel in the Systems Commands are on the second team.

Technical background is necessary for the acquisition of weapons systems, but this does not mean that this background must necessarily be "blessed" by a degree. The individual has to be "self-initiated" man, who doesn't expect to be spoon-fed. He should seek technical experience wherever he can find it, through formal education, if possible, but if

TABLE IV

THE SYSTEM THAT SITS ON TOP OF THE PM*



*Packard address at Armed Forces Mgt Association 20 August 1970

*PMA: Keep them all informed
Make them all happy

necessary by digging into the nuts and bolts of jobs assigned at sea. He should and must get the technical background himself anyway he can.

Up to now this section has reviewed the opinions of a group of individuals in the various divisions of the Material Command involved in the acquisition process. The opinions were a composite of those given in personal interviews. There are two officers who represented their respective communities in the 1969 study. RADM Edwin E. McMorries, SC, USN represented the staff corps, and RADM Joseph E. Rice, USN represented the restricted-line communities. Because of the part they played in the early study, they were interviewed again, RADM Rice in Washington, and RADM McMorries during a visit to the Naval Postgraduate School. Their interviews are summarized separately, to round out this section of the thesis.

a. Interview with RADM McMorries

The need for career development of project managers has been evident over the past several years because of the magnitude of the Navy's acquisition programs. As the fiscal environment tightens and the Navy begins to buy less, then the push for career development of project managers will also diminish.

The project manager's staff is one of the most important training areas for potential project managers. The mix of officers is best accomplished in the Naval Air Systems Command. But it is important to look for the talent which has been developed rather than lay elaborate plans to ensure that someone will always be there. Some look at what we do today and talk about its implications for the future. It is important to follow the advice of Thomas Gates, "Plan for the future, so we act wisely in the present."

b. Interview with RADM Rice

Human nature seeks a rallying point. Specialization is evolving into rallying points along product lines, e.g., destroyers, fighters, attack aircraft, etc. Weapon Systems Acquisition Management is really too broad a concept to be an adequate rallying point. The potential project manager is going to have to pick his rallying point so that he becomes an expert in a certain area of Weapon Systems Acquisition Management. This is going to be particularly true as the officer corps is slimmed down in the immediate future.

A recent and yet unpublished survey provides some interesting conclusions concerning a distinct division between "operators" and "material" people. Any URL officer who has served two or more tours, totaling 5 years or more, in the Systems Commands or Naval Material Command Headquarters, will henceforth follow a definite but unwritten, career pattern and have somewhat limited promotion potential. If he does make admiral, he will not go on to the fleet operational commands enjoyed by his contemporaries. This fact presents practical limitations for the URL officer considering a subspecialty in systems acquisition who aspires to be a project manager.

This concludes the summaries of the interviews conducted in Washington. There are some principles which were mentioned by project managers and functional managers in more than one organizational area so that they can be considered general conclusions.

(1) Part of the difficulty in developing project people lies in the personnel turbulence within the projects. The project manager can't normally pick his own peole and the number of people (officers in particular) varies widely. The project manager can't be sure how many or what people he will have for any period of time.

(2) Project management is an experience in human relations. Other disciplines can be learned, but the development of project people will depend largely on the project manager's own personality and his willingness to let his subordinates participate in the process of managing the project. There is ample opportunity to give subordinates real experience through on-the-job training, but both parties must be willing to take advantage of this opportunity.

(3) Up to now the tour length has been against the unrestricted line officer. The complexity of systems acquisition requires lengthy tours and repeated application to this subspecialty area. It is difficult for the URL officer to bridge both worlds and get the advantages of either. Something has to give. Only the truly exceptional officer can succeed in this kind of environment.

This section has presented the results of the questionnaire survey and the personal interviews. Two obvious divisions of opinion emerge from these results. The WSAM (sub)specialty community will be doubly divided into warfare specialty (each with its individual problems), and into the unrestricted and restricted line communities. The grounds are laid for one subspecialty community with many subgroups.

V. CONCLUSIONS

A. INTRODUCTION

This thesis began with an examination of the characteristics of an ideal executive development program and then proceeded to make a more concrete study of the existing project manager development programs in use in defense industry and the Navy. The same approach will be used in developing the thesis conclusions and proposing some suggestions for a workable development program.

The following conclusions concerning the needs of an executive development program are summarized from an author referenced in Section II [Houston, 1961]. They will form the basis for the recommendations to be made in this study.

> "Harold F. Smiddy, well known for his contributions to manager development, has said that "Managers today do not have any real choice between doing manager development or not doing it. The only realistic choice is between being overwhelmed by this part of their job or being master of it. The cumulative complexities, which have come to business in the last hundred years, have steadily increased the risk of managing by ear, until such a policy represents a luxury of irresponsibility which is neither sensible or socially permissible."
>
> With this statement as a premise and with full recognition of the constructive work being done in many of our business and industrial enterprises, what are the opportunities for improvement and what are some of the important questions with which business men should be concerning themselves?
>
> 1. There is a need for examination of the philosophy and objectives of manager education and development programs.
>
> 2. There is a need for continuing study and research as to the development needs, program content and method, and evaluation of results.

3. There is a need for more systematic, purposeful and continuing attention to the development and maintenance of a "climate" conducive to learning and growth.

4. There is a need for continuing and comprehensive review of manpower requirements both long and short range.

5. There is a need for more realistic and effective standards and procedures governing performance appraisal, selection, and promotion of managers.

6. There is a real opportunity for more effective self development planning. Individual self-development planning is the core of all manager education and development. This calls for:

   a. Mutual understanding between the man and his manager of the man's job responsibilities. ...In any event, if he is to be measured by the results of his performance, each individual must understand what is expected of him.

   b. Periodic and comprehensive performance appraisal. such appraisals should be work-centered rather than an analysis of personal characteristics.

   c. Helping the individual to develop a sound self-development plan.

   d. Participation by the man and his manager.

7. There is a need for more effective integration of off-the-job development programs with on-the-job development.

8. There is a need for greater emphasis on fundamentals.

9. There is a need for effective development of personal skills. For example: analytic skills, teaching skills, learning skills, human relations skills, decision making skills.[16]

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16 Houston, Op. Crt., pp. 35-42.

B. PROJECT MANAGER DEVELOPMENT PROGRAM

This is quite an ambitious list, one in which each development manager can recognize needs or opportunities for improvement in his own program. These objectives might be included in those of the new Officer Professional Development Division of the Bureau of Naval Personnel (PERS B4).

The implications of these objectives for the development of Navy project managers must take into account the practical constraints within which personnel programs must be implemented in today's environment. It is not fair to the personnel managers to take the view of a visiting consultant who can point out the problems without considering the reasons for them, or without making constructive suggestions as to how the situation might be improved. Therefore this thesis will attempt to consider the problems in perspective and make positive suggestions.

1. Examination of Philosophy and Objectives

This subject area is now under study at the Naval Postgraduate School and in the Bureau of Naval Personnel. The balance in the Navy today between those receiving graduate education and those who are not, between those receiving technical education and those receiving managerial training has been the subject of much discussion. Many of the officers attending Postgraduate School are convinced that they are there because they were available, or in order to upgrade their educational level rather than because of any particular need for the output of the program. The officers who serve on the Postgraduate selection boards try to fill the quotas with qualified officers for the various programs. But behind the quotas there is a much deeper question as to the need for management education in the Navy. If there is a need for graduate

management education, and the management problems the Navy is experiencing indicate there is, then the Navy must resolve to make practical plans to utilize the officers who are benefiting from this education.

The Weapon Systems Acquisition Management curriculum at the Naval Postgraduate School[17] is a perfect example of this education and utilization cycle. The curriculum came into existence because of a small number of top-level individuals who, because of their experience and insight into systems acquisition, saw the need for this curriculum as the first step in trying to improve the managerial basis of the officers in this program. The number of officers who should be educated was based originally on the projections of these few individuals rather than on the result of any extensive study. Later the 1969 Study made some general projections as to the need for trained personnel in systems acquisition.

If the judgement of these experts is to be substantiated, the personnel in this education program must be utilized as they were intended, not necessarily immediately, but over the next two-or-three-tour period. As more research is performed into the manpower needs of the Systems Acquisition Management program, the input into this program should be modified. The "fathers" of the curriculum will move on and the education program must come to be firmly based on real needs and not approximations if it is going to continue.

Closely connected with the question of education philosophy is that of manpower requirements. Supposedly education programs in the

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17 Curriculum title has been changed to Systems Acquisition Management.

Navy are to be directly related to the need for personnel with certain qualifications. From time to time the Bureau of Naval Personnel is called upon to explain its management of the graduates of the various education programs. The Audit Committees which question the utilization of graduates would like to receive assurance that the officers who receive their education will be ordered to one or even two "pay-back" tours. The Bureau's answer to this criticism helps illustrate some of the difficulties in carrying out such a development objective.

> The entire subspecialty concept is predicated on being able to realistically identify and code the Navy's needs. Once the requirements are defined, the existing inventory will influence the immediate educational pipe line in an effort to match the requirements and the inventory. Since requirements change drastically with short notice changes in force levels and military commitments, and since inventories of specific educational discipline take a long time to create or alter, a continual instability exists. Policies shift faster than the ability to educate. What remains is an inventory which never seems to match requirements. What appears to be an abnormal amount of mismangement and non-utilization of talent the Navy has paid to create, is in reality a basic problem that can only be solved by having a stable military organization without the flexibility to meet shifting needs. Therefore a degree of apparent mismanagement will continue to exist as long as the Navy maintains a necessary flexible posture.
>
> There are, however, positive improvements in the system being incorporated. The primary improvement involves better identification of requirements and translating these requirements into controlled quotas as applied to the numerous educational programs such as the P. G. program, PH.D. program.... Professional Development Program, etc. The secondary improvement involved direct management of inventories to improve utilization within the Officer Assignment Section of BUPERS. Closely allied to the improved management of subspecialty inventories is the delineation of subspecialty communities and development of associated career patterns.

> There is a tendency to overcompensate in an effort to improve past deficiencies and a tendency to make changes on top of changes without permitting a reasonable time lapse to obtain value judgements from the initial changes. This continual changing situation is creating increased confusion and instability.[18]

2. Study of Manpower Requirements

Since the study of a project manager development program began, the need for a list of systems-acquisition-related billets has been recognized. Several attempts have been made to establish such a list, the most thorough being that of the 1969 Study. Three agencies have become involved: Because of the technical nature of the billets, Naval Material Command Headquarters has been concerned. Manpower requirements and identification of billets are the functions of OPNAV (OP-01). The Community Management of the WSAM subspecialty is the responsibility of the Bureau of Naval Personnel (PERS B43). For many reasons the study of manpower requirements has not been completed.

The effective selection of personnel for WSAM postgraduate education, the selection of proven sub-specialists in each of the warfare specialty areas, and the ability of the Subspecialty Manager to do his job all depend on the existence of such a list of billets. It has been one of the purposes of this study to help establish an initial working list, which could be later refined to serve as the manpower requirements documents for the WSAM subspecialty community. Three steps have been taken to carry out this purpose:

a. The respondents to the questionnaire were asked to identify billets which should be WSAM-related.

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18 PERS-Bic Memorandum for Pers-B1C, 13 April 1972, p.2.

b. A list of NOBC's composed in 1969 was refined to further identify these billets.

c. The Officer Billet Summary and computer printout by NOBC provided by OPNAV (OP-01) have been reviewed.

The result of this billet survey is included in the appendices. Appendix J is the list of suggested NOBC's and Appendix K is the list of billets themselves. It should be emphasized that these lists are only starting points. Further research is needed in this area if the Career Development Program is to be need-oriented. But without such a list (even as rough as this) the rest of the development program becomes unmanageable.

3. Development of Climate for Growth

One result of the 1969 Study was the recognition of the major Project Manager billet as command equivalent. This form of recognition was considered necessary both to underline the importance of the project manager position and to attract top unrestricted line officers to serve in this capacity. Such compensation for performance such as this cannot be limited to the designated project manager. Not that a subsidy need be established for systems acquisition personnel - performance should be required of them like everyone else - but a positive environment must be established which will permit development and growth. Any negative stigma which may exist for the URL officer in a systems acquisition billet in the field, or in the Naval Material Command must be eliminated. This situation is a vicious cycle. Top performers have to be put into these billets to upgrade the quality of systems acquisition in this area, but the billets have to be considered worthwhile if top performers are to be attracted.

The comments of Admiral Rice (in his interview summarized above) provide a good behavioral response to this question. BUPERS policy as promulgated by the individual detailers has always been that performance was to be the standard of measurement for promotion. But for the individual who is planning his own career development, the importance of the billet will play a deciding role. No officer with a good performance record will wish to select an assignment which has a reputation among his peers as "second team." According to RADM Rice's study, the "second team" nature of these billets will continue to be a problem until Navy top-level management takes positive steps to provide a climate for growth.

4. Appraisal of the Subspecialist

The fitness report form now in use has only one block in which to evaluate the officer in his subspecialty. This block is only used when the officer is actually serving in this capacity so that his performance can be evaluated. There is no attempt to identify the subspecialty for which an officer is qualified, but only to evaluate past performance. The present fitness report is specialty-oriented. While it has been pointed out that the superior has been better qualified to judge the subordinate's performance than his future potential, the importance of the latter function to career development programs is undeniable.

In the near future (presently July 1973) a new fitness report form will be adopted which recognizes the future role of the subspecialty in the Navy. The new form will require the supervisor to evaluate both performance and potential. A copy of this fitness report form is included in Appendix I. These evaluations should be useful

both for the individual as a measure of his self-development and for the Community Subspecialty Manager and Selection Boards.

5. Self-Development Planning

One recurring ingredient in industry development programs has been the individual development plan. The Martin Marietta plan in industry and the Engineering Duty Officer plan in the Naval Ship and Electronic Systems Commands are good examples of the use of individual plans. (See Appendices A and E).

The Navy has tended to avoid the use of this type of plan for two reasons. First, there were too many officers in any of the specialty areas to allow the small number of personnel managers to help the individual make up such a plan. Secondly, there has always been a reluctance to bless any specific pattern to success. The lack of individual guidance in this area was to be compensated for by the issuance of Officer News Letters which contain general career guidance. Unfortunately these Letters suffer from the lack of immediate feedback, poor distribution (insufficient number of copies), and lack of timeliness. (There is a tremendous delay between writing and publication) Secondly this guidance could be provided by the individual's commanding officer or detailer on a demand basis. Unfortunately, neither of these sources can be expected to provide a good guidance in the area of subspecialty. The commanding officer may not be as knowledgeable in the subordinate's subspecialty even though they share the same specialty. The detailer is part of the officer assignment branch of the BUREAU and, as such, is concerned with short term problems and a wide spectrum of subspecialties so that he has to go to others for long-term guidance. This was one of the reasons for the establishment

of the Officer Professional Development Division and the Subspecialty Managers, who can provide the individual with accurate information to be used in career planning. What is needed is a form of communications which establishes a source of information for the subspecialist, information which is flexible enough and useful for personal planning. Such planning must be based on requirements which are within the individual's capacity to fill. The systems acquisition billet list would be a good source of information except that only a small percentage of these billets are within the capacity of a given individual. Also the availability of any particular billet is subject to change so that this list would have to be continually updated to be useful.

What is needed is a grouping of billet types into lists by warfare specialty and educational background. As RADM Rice suggested, WSAM is too broad a field to serve as a rallying ground. Subspecialization along product or warfare system lines is more realistic.

The individual officer now submits to his detailer a preference card which normally must be characterized as being a "wish list." The lack of reliable information as to the type of billet for which the officer's education and experience qualifies him causes him to ask for infeasible assignments and thus waste his choices and provide little assistance to the detailer in satisfying the individual's desires. Instead of this, the Subspecialty Manager should send each of his officers a list of the billet types for which he is generally qualified in the subspecialty area. By breaking down the suggested list of WSAM related billets into sublists, six career guidance lists could be established, one for

aviation - unrestricted line
aviation - restricted line
surface - unrestricted line
surface - restricted line
subsurface - unrestricted line
subsurface - restricted line.

Billets which could be filled by either restricted line or unrestricted line officers would appear on both lists for that warfare specialty. Examples of these guidance lists are included in Appendix L. The list appropriate to the individual and a career planning form similar to that used by the Engineering Duty Officers (Table V) would be sent to the officer, who would make out his plan and return a copy to the Subspecialty Manager. If the numbers of officers being managed by this manager is too great to permit him to keep up with and use the individual's plan, then - as a minimum - the list and planning forms should be sent for use and retention by the individual. A less satisfactory solution would be to publish the lists in an effective form of the Officer News Letter. At any rate the individual officer would be given realistic information upon which to base his plans and he would be able to see that the Subspecialty Manager is interested in helping in a practical manner. The officer responsible for subspecialty management would be supplying this information to the individual and to the detailer.

6. Transition from Functional to Project Management

One of the advantages of a well-planned Systems Acquisition Management Development program is that it provides for the transition from functional management to general management. The officers serving on the lower levels of the project or in the field are more deeply involved with a functional specialty, like testing, logistics, technical requirements. By progressive planning and use of on-the-job

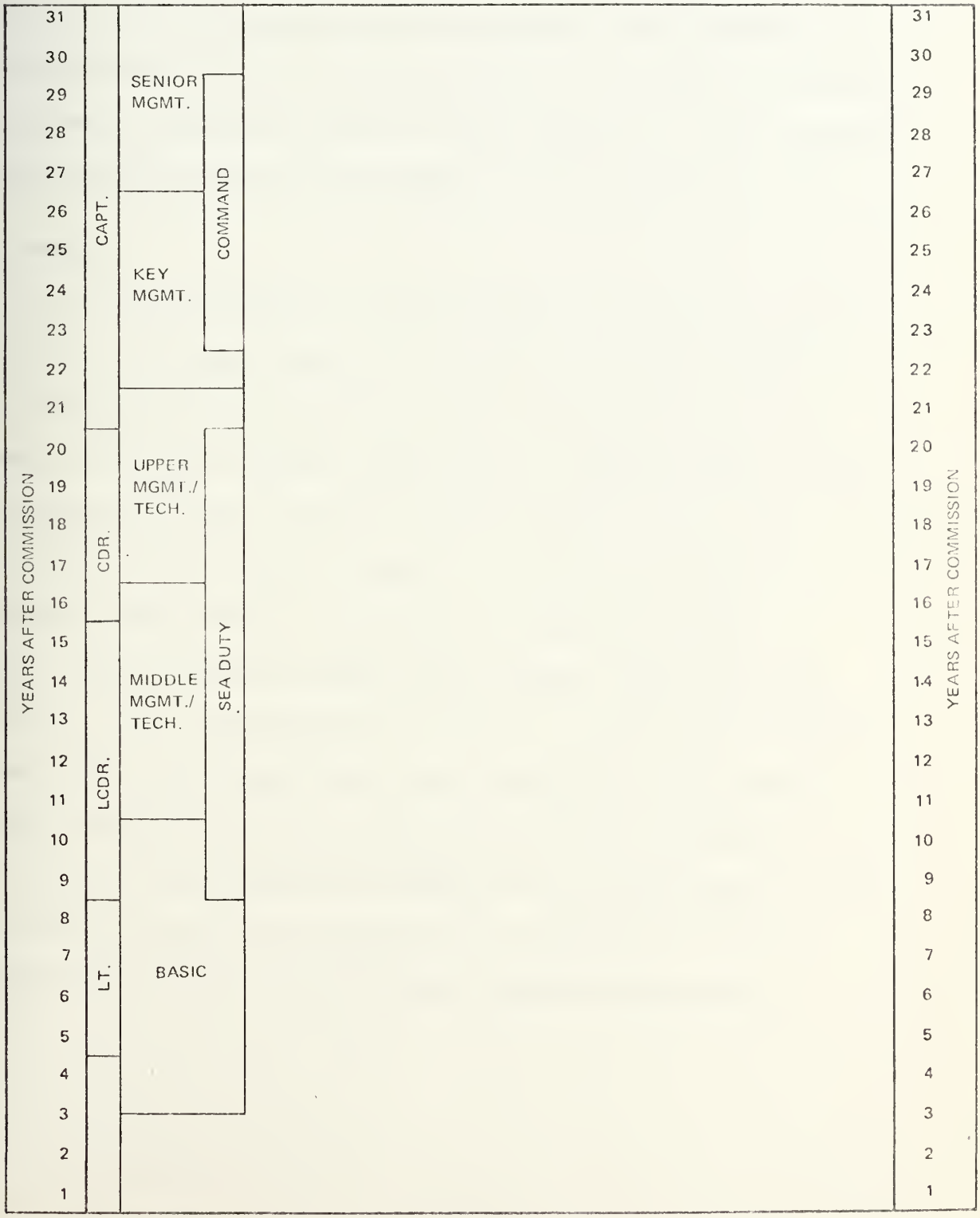
TABLE V

ED CAREER PLAN

Name _____ Date _____

Primary Functional Area _____

Secondary Functional Area (if desired) _____



techniques, the officer is exposed to the broader point of view required of general management as practiced by the project manager. Through use of job rotation, committee assignments, and different kinds of functional training and Washington-Field rotation, the subordinate is exposed to a variety of problems which will stand him in good stead as he rises to higher levels of systems acquisition management. The integration of on-the-job and off-the-job programs will provide the type of experience which cannot be gained from any one kind of training. In the age where much is demanded of the project manager, he will have more to offer.

C. SUMMARY

This study has focused the entire emphasis on the project manager position as the natural goal for the development program. However, it is conceivable an individual could become a subspecialist in this community and become intimately associated with Weapon Systems Acquisition Management without becoming a project manager, i. e., without ever serving in the Naval Material Command. A sequence which would take an unrestricted line officer through test and evaluation billets to warfare code in OPNAV to research and development, might seem more satisfying to the unrestricted line officer. It seems, however, that to make this a natural path would tend to deprive the Naval Material Command of top-performing line officers and dilute the objectives of the program. This subspecialty program must leave many paths open for individual initiative, but it must always recognize the role of the project manager as the focus of systems acquisition management.

This thesis has attempted to trace the role played in project manager development by three factors: education, functional training and experience. In surveying the programs in use in defense industry and the Navy, several opportunities for improvement in subspecialty development have been identified. In addition, suggested billets have been identified for Weapon Systems Acquisition Manager Development and a method of individual development planning has been proposed. In the final analysis, only through concerted effort on every level will a realistic subspecialty development program be implemented.

APPENDIX A. CAREER DEVELOPMENT PROGRAMS FROM DEFENSE INDUSTRY

MARTIN MARIETTA AERO SPACE GROUP (October 1969)

1. INTRODUCTION

In August, 1969, a requirement was forwarded to the Professional & Management Development office to plan a program to train current small contract program managers (less than $1M) and selected technical professionals in the program manager's function; specifically, one executive stated "If we are to continue to grow, we must formally train current program managers and selected professionals in the knowledge and skills of program management."

1.1 Purpose

The purpose of this training plan is

- To detail the training approach to fulfill this requirement during 1969-70.

- To document the tentative training program decisions concerning the knowledge and skills needed; planned approach to meeting the requirement; curriculum; resources required; and methodology for determining program effectiveness.

At this writing, a number of critical information and implementation decision gaps exist which need to be filled before preparing a final plan; however, this preliminary plan is provided on the basis of decisions made to date with currently available planning factors.

1.2 Overview

In this time of growth wherein nearly 100 different contracts are currently in-house and with the anticipation of more to come, a rapidly growing problem is becoming apparent. That is, we are lacking in depth of experienced and knowledgeable program managers. Also, current new program managers are not totally aware of what division resources exist and how to use them.

To correct this problem, a training program has been developed to formally train selected individuals in the program manager's responsibilities, duties, identified knowledge and skills. This plan, with these dimensions considered in relation to the planning factors which follow, provides the basis for the training program development and implementation.

1.3 Planning Factors

The following factors have been considered in preparing this plan. They are:

1. The participant's entry into the program will be based on selection by an ad hoc selection committee to be named by the Vice President of Technical Operations.

1.3, cont.

2. Each of the participants will enter the program with different degrees of program management knowledge and skills which will cause training to be provided on a modularized basis.

3. Training will be conducted on-site (formal course work and on-the-job assignments) and off-site customer contact to establish knowledge of and rapport with the customer.

4. Training in formal classes and ensuing "Program Manager's Workshops" will be conducted in a classroom space which will hold approximately 30 participants with room for panel presentations, lectures and video equipment (taping sessions for future use of those unable to attend scheduled sessions).

5. Scheduled course work will require approximately 10 to 40 hours, depending on the depth of subject matter needed by the individual.

6. Cooperation from functional departments will be vital to the success of the training program. Instructors who are specialists in specific subject content will be required from these departments along with coordinators for the Phase II portion of the program - on-the-job assignments for identified areas of weakness in program management.

7. It is planned to have a two-hour session per week with a half day for Phase II activities until the formal training cycle is completed.

2. MANAGEMENT REQUIREMENTS

The requirements listed below are tentative. Further investigation through use of the proposed ad hoc advisory committee will identify additional requirements. Those identified to date are

1. The program should begin during the month of November, 1969.

2. The target population should consist of

   - Program managers who have recently started managing their first program.

   - Program managers who are selected to manage medium-size contracts ($1-5M).

   - Technical professionals not yet managing programs but who have been selected to manage future programs.

2. cont.

3. This training program should be a continuous program of recycle until management indicates that requirements for knowledgeable program managers have been fulfilled.

4. Training will be conducted on company time.

3. PROPOSED TRAINING PROGRAM

3.1 Purpose

The nature of today's business has created a continuing need for the development of program managers. The availability of top-notch technical professionals is just as essential in obtaining contracts as it is in meeting contract requirements successfully. This type of individual most often is developed from within.

The purpose of this training program is to prepare competent technical professionals in the necessary knowledge and skills of program management. Specifically, it will encompass "How business is performed in today's environment to develop quality hardware on time and within negotiated cost limitations."

3.2 Length of Program

The length of the program will vary per individual depending on his rated proficiency and experience. This will be determined by the individual, his supervisor and the ad hoc committee. See Section 5.3 for participant needs. The course of formal classroom training will be modularized so individual attendance will be governed by need for specific knowledge and skills. The course, made up of the three phases explained under Concept of Instruction, (3.4) will be repeated as many times as necessary to assure an abundant number of trained program managers in the division.

3.3 Eligibility

An individual must be currently a program manager of small or medium-size contracts; has been a proposal manager; or has been appraised jointly by a technical department manager and an experienced program manager as having potential to become a program manager.

3.4 Concept of Instruction

The training program will have three basic phases which will apply to all participants. They are:

Phase I. Attendance at formal classroom instruction in relevant subjects of program management, listed hereafter in 3.5.

3.4, cont.

Phase II. On-the-job experience in which a participant who has not been a program manager will serve as a member of a short-term (three to six months) project. An assignment schedule will be drawn up by the participant and approved by the program manager. The schedule will include meaningful project assignments to cover the total project responsibilities and duties. Participants who are now, or have been, program managers will not need to participate in Phase II.

Phase III. Briefing and contacts with customers will be planned by either the ad hoc committee or the participant's supervisor and coordinated by the Marketing function to include a thorough indoctrination of customer organizations, operating methods and procurement requirements, and opportuniites to meet the potential customer.

3.5 Phase I Suggested Subjects and Instructors

The subjects listed below are intended to be combined to meet the schedule of one two-hour classroom session per week. Final planning will be conducted after management go-ahead.

	Subject	Suggested Instructors
1.	Program/Proposal Manager's Responsibility and Authority over Organization Elements and Decisions	Panel - N. E. Landy W. F. Barrett
2.	Pre-Request for Proposal Phase	T. J. Sisk
3.	Request for Proposal Analysis	L. G. Taigman
4.	Module Concept	Karulf
5.	How to Exchange Experience with Past and Present Programs	Panel
6.	Proposal Writing and Synthesis	W. T. Scofield
7.	Contract Cost Estimating	S. P. Kassy
8.	Fundamentals of Contracts Including Scope	T. R. Callan
9.	Small Project Controls, $1-5M	Panel - N. E. Landy W. J. Lovegrove
10.	Long-Range Planning Application	P. H. Neukirch
11.	Finance: G&A; Overhead Control; Proper Fees	G. R. Hilton
12.	Customer Requirements and Reports	C. B. McClure
13.	New Business Acquisition Expenditures (NBAE)	L. G. Taigman

3.5, cont.

14.	Project Planning and Schedule Formulation	J. E. Watson D. H. Hodder
15.	Contract Accounting	J. A. Dubbs
16.	Configuration Control Policy and Procedure	E. F. Haeger
17.	Data Management Policy and Procedures	C. N. Izett
18.	Organization and Function; Customer Organizations	G. E. Elm & Others
19.	Air Force Policies and Regulations, 375 Series	J. H. Nelson
20.	NASA Policies and Regulations	J. H. Nelson
21.	IR&D/TOS	M. H. Huddleston
22.	Finance - Funding/Limitation of Cost/Title to Property	F. J. Charney
23.	Relations with other Functions - Manufacturing, Quality Control, Procurement	A. J. Fria
24.	Know Your Customer/User	Panel
25.	MPC200-2, -3/641-19 QC Req.	
26.	Contract Closeout Policies and Procedures	F. J. Charney

27. Procurement
    a. Price and Delivery Information
    b. Surplus
    c. Stockroom
    d. Make or Buy
    e. Specifications
    f. Priorities - Lead Time
    g. Petty Cash Purchases
    h. Material Requisitions

28. Property Accountability, Scrapage Consumables

29. Tooling, Tool Numbers

30. Production Control

31. Facilities - Specification, Purchase Req. Approval (CER), Lay-Outs, Implementation, Maintenance

32. Expediting (Internal-External Transportation)

3.4, cont.

33. Receiving Inspection

34. Prorates

4. RESOURCE REQUIREMENTS

4.1 Instructional Staff and Responsibilities

Instructors will be current experienced program managers and specialists from line departments. Coordination of instructors will be by the Professional & Management Development department with advice from the established ad hoc committee.

4.2 Media, Equipment, Materials and Methods

Available media and equipment will be furnished by the Audio-Visual function of Marketing and coordinated by the Professional & Management Development department. It is planned that individual presentations be video-taped for a future reference library so other new program managers or those not able to attend initial sessions will have access to the information.

4.3 Facilities

A space to comfortably hold up to 30 participants will be needed in-house. The three areas adequate will need to be reserved. They are the Presentations Rooms in the Engineering and Space Support Buildings and the Control Room in the Administration Building. The Presentation Room in the Engineering Building is preferred because of ease in handling video equipment and its proximity to the majority of anticipated participants.

5. IMPLEMENTATION PLANNING

5.1 Interfaces

Finalization of this preliminary plan will be the responsibility of the Professional & Management Development department, based on recommendations of the ad hoc committee and several members of advanced management.

5.2 Resource Availability and Training Schedules

The Resource Availability and Training Schedule, Exhibit 1, reflects the need dates of (1) the instructional staff, (2) presentation area, (3) camera and video playback equipment, and (4) curriculum materials. The overall Training Schedule at the bottom of Exhibit 1 indicates participant attendance and scheduling over a six-month period. Also, it reflects the parallel training to integrate Phases I, II and III of the training program. The three-phased training schedules reflect tentative planning for three sections of participants. Finalization of these schedules will be completed at program go-ahead.

Management Training at Sikorsky Aircraft

A wide variety of training programs have been developed and conducted over a fifteen-year period for functional department and program managers and supervisors ranging from short-, specific-subject briefings to one-, two-, and three-year full-time courses. Trainees have ranged from inexperienced new hires through all ranks to and including senior, top-level managers.

All courses and programs have been specifically authorized by the Division President or Vice President, or by a Senior Department Manager. In most instances attendance has been mandatory. Individual trainee performance has been reported both to the trainee and to his line supervision. In numerous cases, promotion or reassignment following training has hinged upon the Training Department recommendation.

These programs have, generally, followed philosophically the ideas and concepts of Fritz Roethliberger, Peter Drucker, Douglas McGregor, Robert Anthony - and, more recently Eric Vetter and Alvin Toffler. In addition, by virtue of this Division's heavy involvement as a prime systems contractor, considerable attention has long been given, in Training, to the management approach and disciplines used by the armed services under DoD philosophies and practices, i.e., "Program and Systems Management" and much of the training content in this area has required interfaces with military training organizations.

In general, all programs have been developed and presented in-house during regular working hours. Instructors have been both full-time members of the Training organization and competent people selected from within the organization itself. Occasionally, outside expertise has been hired to provide specialized training.

Sikorsky's "management development" approach has been strongly influenced by England's Metropolitan-Vicker's and Bethlehem Steel's long-standing practice of starting management trainees at the "workshop" level by the use of planned, rotational "real-work" assignments supplemented by appropriate classroom work, reading, projects, and seminars. The "behavioral-science" approach to management development has not proven demonstrably useful either in enhancing the performance of incumbent managers, or in preparing prospective managers. Nevertheless, materials from this broad area are generally included in most programs.

Undergraduate and graduate study has been integrated with in-house programs wherever possible and many trainees have received academic credits (both undergraduate and graduate) for management courses completed in-house.

SIKORSKY AIRCRAFT

ADMINISTRATIVE/MANAGEMENT (A and M) TRAINING PROGRAM

OBJECTIVES

This program is designed to train selected individuals for managerial and/or administrative assignments.

SCOPE

Phase I (22 weeks) entails intensive, hands-on, exposure to the hardware aspects of our business, and c enters primarily on manufacturing activities.

It inquires into the nature of our product--what it is, how it is made, who is involved, and what the resources are that are applied and used in the process of production.

Phase II (3 weeks) is a transition phase--where, in the Service School, the trainee fits t ogether the elements acquired in Phase I into the finished system package of a specific model. Ideally, that model would be the principal concern of the Program Office to which he will be assigned for Phase III.

Phase III (28 weeks) explores, rather comprehensively, the sourcing, planning, allocation, and utilization of the Division's total resources as seen through a representative major program activity, with particular attention given to the control interfaces within, and between departments. It employs the concept of "up-stream" training--starting at the beginning of the product's life cycle, and tracing, logically, the functional flow of activity--not only to t he delivery of the finished end-item system, but on into the environment of an actual customer whenever possible.

CONTROL AND ADMINISTRATION

The Vice President for Air (and/or, as applicable, for Ground) Transportation shall authorize the number and frequency of admission of candidates to this program, and shall designate and authorize the initial assignment of each trainee successfully completing this program prior to that completion. It shall be the responsibility of the Supervisor of Training to execute and administer this program.

A special account number will be established to be used exclusively to identify, charge, report and control those costs directly generated by this program.

PREREQUISITES AND COMPENSATION

Admittance to this program requires a college degree, preferably in a technical or business-related field, plus at least one year's work experience at Sikorsky Aircraft or its equivalent. The ideal candidate would possess, in addition to the Bachelor's degree- a Master's in business administration and would have had recent experience in either a military or business assignment.

Trainees admitted to this program will receive not less than the minimum salary of Labor Grade 43 and, upon graduation, not less than the minimum salary of Labor Grade 45.

GENERAL

Trainees shall make periodic, formal written reports, as required. Furthermore, each trainee shall develop and maintain flow-chart profiles delineating the input-throughput-output functions of each activity to which he will be assigned throughout the program.

SCHEDULE SUMMARY

PHASE I

The aim of this phase is to give the trainee a thorough understanding of the Division's production system and capability by first-hand practical tours and work assignments in Manufacturing, Quality Control and Industrial Engineering.

Particular attention is given to the how, when, and where of the production cycle with emphasis on the scope and limitations of the entire process in terms of personnel, material, cost, methods, and time.

ITINERARY

1. General Orientation (Training School) — 1 week
   a) Including objectives and philosophy of management
   b) Over view of course and Organization
   c) Review of UAC & SA
   d) Complete plant tour
   e) Flow charting techniques
2. Machine Shop Training & Work Assignment — 3 weeks
   a) 2 weeks training in Training School
   b) 1 week assignment in machine shop
3. Sheet Metal Training — 2 weeks
4. Tooling Tour — 2 weeks
5. Blades Tour — 1 week
6. Detail & Processing Tour — 2 weeks
7. Shop Fabrication Tour — 2 weeks

   (Elect./Hydraulics Rotor, Head & Gear Box Sub. Assy.)

8. Final Assy. Assignment — 2 weeks

(Here the trainee would actually work on the aircraft of the program to which he is to be assigned).

9. Production Hangar & Flight Operations — 2 weeks

(1 week first shift, 1 week second)

10. Bridgeport Plant — 1 week

O & R, Fiberglass

11. Quality Control — 2 weeks

The trainee should become familiar with the military requirements for Q. C. as well as the in-house and external work of Inspection on SAQCVR's.

12. Industrial Engineering — 1 week

13. Training School---Recap and Final Report — 1 week

Phase I Total: 22 weeks

PHASE II SERVICE SCHOOL

Whenever possible, trainees will be scheduled for a "Maintenance Officer's" course. — 3 weeks

PHASE III

This phase is based on the concept of "up-stream training, i.e., starting at the sources of our business as seen from a Program Office, and following the functional flow of activity, not only through the organization to the back-door delivery of a finished aircraft or system, but even on into the user facility where the important matters of logistics operational problems and maintenance are to be found.

ITINERARY

1. Programs — 4 weeks

The broad question to be explored and answered via this phase is, "What is the task that the company has undertaken, and what are the major milestones within that task that must be planned, controlled, and accomplished?" The trainee is assigned to one of the major program organizations responsible for a current production program as a staff assistant to the Program Manager.

Step I — The trainee will become thoroughly acquainted with the contractual document (s) that constitute the core charter of the program.

Step II — He will become acquainted with the program plan, the status of the program and will participate in all meetings involving program personnel.

Step III — He will spend sufficient time with program support personnel so as to become acquainted with the management tools, techniques and activities that control the program--particularly those involving cost, budget, schedule and performance.

Step IV — He will become familiar with the functional department activities and functional department personnel that interface directly with the Programs people. Particular attention will be given to the Marketing/Engineering interface.

2. Marketing — 2 weeks

This step will entail a two-week tour within the Marketing Organization to acquaint the trainee with the work done by that department. He should spend a few days with the proposals section and, whenever possible, accompany a marketing group to observe an actual formal presentation.

3. Engineering — 3 weeks

This step will entail a three-week assignment in the Engineering organization, under the guidance of a Chief Project Engineer. While the point of reference will be the particular aircraft model that is the province of the Program activity constituting the trainees conceptual "home room", it should spill over into other models activities and technical programs, as appropriate and convenient. This step should give the trainee a thorough grasp of the work done in:

a) Advanced Research and Preliminary Design--particularly to review the major decisions and tradeoffs that established the current baseline configuration of the current hardware.

b) Detail Design--a tour through the sections involved in the continuing engineering effort with special attention being paid to the manner of handling changes.

c) Test Facilities

d) Engineering Documentation Program

The trainee should become well-acquainted with r major phases of documentation:

1. That contractually required.
2. That underlying the normal internal activities of the Engineering organization.
3. That of a Divisional nature applicable to the above.
4. That interfacing the Project organization and Programs personnel.

4. Experimental Department — 1 week

5. Manufacturing Engineering — 2 weeks

6. Production Control — 2 weeks

Here the trainee should make sure he understands the interface with Manufacturing Engineering as well as covering the Production Planning and Material Control sections.

7. Purchasing — 3 weeks

a) This follows logically from P. C. and the interactions should be examined closely.

b) One week should be spent on a department tour and the other two at "work" in one of the sections. If a section such as Transmissions is chosen, it would give the trainee a chance to visit a major vendor such as IGW.

8. Product Support — 1 week

9. Personnel — 2 weeks

a) One week general tour

b) One week in PA office

10. Accounting — 2 weeks

This step will entail a two-week tour in the Accounting organization. The trainee should become acquainted with:

a) Normal work and payroll-charging procedures

b) Overall accounting activities

c) Product pricing procedures

11. Information Systems — 2 weeks

12. Staff Assistant--Project Superintendents: — 2 weeks

The trainee should be assigned to the Superintendent responsible for his program to relate the operations and interface of Manufacturing management and the Programs Office.

13. Programs — 2 weeks

During this final step, the trainee should emphasize the programs part and contact with the user. If possible, he should visit a facility and talk with the customer about the problems of maintenance, parts, utilization and changes.

Phase III Total	28 weeks
Program Total	53 weeks

THE GRUMMAN PROFESSIONAL DEVELOPMENT PROGRAM

The Professional Development Program is a two year period of varied, responsible, productive working assignments of approximately six months duration in four areas of the Grumman Corporation coupled with a planned series of lectures, seminars, and courses. The program is based on the concept of expanding capability through selected experience, classroom work and career guidance. Its objectives are:

- To broaden the participant's knowledge of corporate organization, policy and operating environment.
- To extend the participant's experience, knowledge, and capability in disciplines associated with his career development requirements as established by his nominating department.
- To insure the continuity of leadership at the professional level in Grumman Business, Technical and Manufacturing operations.

The core of each participant's program will be the experience acquired by working in various areas of the Company. Assignments will be planned by the Professional Development Staff, the program member, and the management personnel who nominated the individual to the program. Such assignments shall normally be six months in duration. However, exceptions to this policy will be recognized when appropriate. Both the number and duration of assignments shall be a matter mutually agreed upon by Professional Development and the individual program member's parent organization. The experience will be designed either for broadening or for in-depth technical exposure depending on the developmental requirements of the participant. Assignments may be planned to meet the needs of the engineer who requires in-depth technical experience in product design areas; the business professional who requires broad experience in a number of corporate areas; or the manufacturing specialist who requires both technical and administrative assignments. Experience goals will be established by each program member and his parent department prior to the commencement of his program.

To supplement the working experience, a series of lectures and seminars will be provided. The series will cover the Grumman Corporation; its organization and operations; the technological, industrial and business environment in which it operates; and special course work developed to meet the needs of the program members.

OPTIONS

In order to serve the needs of all corporate professional disciplines, three options will be available within the framework of the program. The options are identified as:

- Business
- Manufacturing
- Engineering

Program administration, planning and reporting procedures, corporate policy guidelines and approximately seventy-five percent of the lecture seminar series will be common to all options. A requirement for unique emphasis by discipline is the reason for the separate options and will be the factor that distinguishes one option from another. The differences among the options will be in the area of selection of program members, assignments, course work, and progress reporting responsibilities.

These distinction are outlined as follows:

Business Option:	Selection of participants by a group representing business oriented departments. Business, planning, administrative assignments. Business, planning, administrative course work. Progress reporting to participant's parent department.
Engineering Option:	Selection of participants by Technical Operations. Engineering/technically oriented assignments. Engineering/technically oriented course work. Progress reporting to Technical Operations Management.
Manufacturing Option:	Selection of participants by Product Manufacturing and Quality Control. Manufacturing oriented assignments. Manufacturing oriented course work. Progress reporting to Product Manufacturing and Quality Control Management.

REPRESENTATION - STEERING GROUP

A steering or policy group composed of Departmental Directors or their deputies will decide matters which affect the overall program and will evaluate program performance from both the corporate and the departmental points of view. This group will determine program size (numbers of participants) during an annual manpower planning cycle, set general policy and provide direction concerning general program structure. Each participating department will therefore have a direct impact on the policy, the scope, the direction, and the structure of the program. Periodic reports will be made to the steering group for purposes of program evaluation and review. Organizations represented on this group are shown below:

Technical Operations:	Product Engineering Product Support

Product Operations:	Product Manufacturing Quality Control Flight Acceptance
Staff Departments:	Operations Planning & Budgets Contracts Material Personnel Treas./Finance
Program Management	

CANDIDATES

Candidates for the program will come from virtually every Grumman Aerospace Department. Candidates for the Business Option can be named from any department where business disciplines are practiced. Candidates for the Engineering Option will be from product design, test, evaluation, and support departments. Candidates for the Manufacturing Option will be from Product Manufacturing and Quality Control.

Regardless of the option for which the candidate is nominated, all candidates for this program should have acquired between five and ten years of professional experience, should have at least two years of Grumman residence, should hold a bachelor's degree or its equivalent and should be ranked very high in both performance and potential by their supervisors.

ADMINISTRATION

Administration of the program will be the responsibility of the Professional Development Section of the Training and Development Department. This responsibility includes implementation of program policy, assistance in assignment planning, arrangement of the assignments, planning and execution of the lecture seminar series, budget planning and administration, and personnel administration. Professional Development will report to the Policy Group on general program matters and to each participant's parent department on individual program member progress. Program participants will be transferred to department 326 and will retain that clock number for the duration of their program. All program labor and other costs will be allocated to this department.

PARENT DEPARTMENT ROLE

The program is an instrument for corporate departments to utilize in the career development of selected individuals. The parent organization will initiate nominations and participate in the selection of program members. Individuals will enter PDP with experience goals developed and approved by their parent organization, which will monitor their progress, provide counseling and receive regular reports on program members from the Professional Development Section of Training and Development. The parent department will also retain the right of concurrence on all salary changes.

Program members will be considered individuals selected and temporarily transferred by functional departments for special, identified career development aligned with the goals of the parent organization. Special attention will be given to sustaining the ties between the parent organization and the program member in order that the developmental goals, jointly established by the individual participant and his nominating department, can be achieved.

STRICTLY PRIVATE

ANNUAL

INDIVIDUAL DEVELOPMENT PLAN

for

INDIVIDUAL _____

Name

BOSS _____ Date _____

Name

STRICTLY PRIVATE

DENVER DIVISION

Research in personnel management was performed in 1953 to determine what significant activities contributed to the growth and development of managers.*

1. Men learn best by doing.

2. Managers exert a major influence on the development of the men who report to them.

3. Development is, in the last analysis, self-development.

In 1957, under the direction of a research psychologist from the University of Pittsburgh, additional research was conducted in this area. The findings showed that the individual achieved growth when he:

1. Recognized and accepted the need for improvement;

2. Had the abilities required to make improvement;

3. Had the desire to improve;

4. Took result-oriented action to make improvement.

In the two studies, the outstanding point was that the greatest opportunity for development lies in the work the man is doing and his desire to learn, grow, and improve his performance.

We should keep in mind, that the man has a dual role, that of a student and learner, as well as a coach and counselor. We now know that true self-development requires voluntary and enthusiastic acceptance by the man of an "Individual Development Plan" (IDP), which integrates his goals, desires, and plans with the experience and help his boss and the Management Development staff can offer him in achieving them.

The IDP does not accomplish the development; it spotlights the individual's desire to improve, and when the boss contributes to it, it enlists his open support of the steps the man will take in his own behalf.

Tomorrow science will have moved forward yet one more step, and there will be no appeal from the judgment which will then be pronounced on.... organizations that have been lax in motivating and supporting the intellectual development of their own decision-makers.

-- Alfred North Whitehead

*General Electric funded study

INDIVIDUAL

1. On the next page (A-4) entitled "Position Description", list the responsibilities and duties of your present position as you are performing them. Obtain agreement from your boss. This information should be used as the basis for the identification of your short-range development needs, which will be explained later in the instructions.

2. Next, complete the Personal Career Data on page A-5. Notice you are asked to consider your short-range career goals (1-3 years) as well as your long-range career goals (more than 3 years).

3. On pages A-6 through A-10 there is a checklist of development reminders that you should review for the purpose of self analysis. Check the major items (ones with ☐ in front of them) that are important to you for performing more effectively in your present position, as well as those that will assist you in achieving your career goals and contribute to your future growth in the Corporation. Also, write in needs that are important to you but are not listed. List the write-ins under the heading "Other" at the end of each major subject reminder, or on page A-10 under Development Write-ins.

   After identifying your development needs, rank all numbered needs (including any write-ins) to determine the priority of development actions for your short- and long-range development.

4. Note that pages A-11 through A-14 are "Planned Development Sheets" (PDS). The first column is to be completed by you for discussion with your boss. For those numbered subjects on the development reminder checklist that you have ranked (pp. A6 - A10), please write in the letter and number of the item. Then, specifically identify your needs by writing in the subitems (ones with · in front of them) that pertain to your needs.

5. Next, establish a priority development action plan for yourself (assistance from the Management Development staff is available), and identify a target date, as appropriate. Take this plan to your boss in preparation for your first planning session with him.

   The following are typical of development actions that can be taken by you, your boss, or Management Development (MD):

   (a) Delegation followed by coaching on the job;
   (b) In-house study-discussion seminars;
   (c) Consultant lectures;
   (d) Group discussions with peers;
   (e) Special reading assignments;
   (f) Career counseling by MD personnel;
   (g) Special short-term project or functional assignments;
   (h) Long-term job rotation assignments with increasing responsibility;
   (i) Attendance at short-term consultant seminars;
   (j) Attendance at short-term or long-term university programs;
   (k) Participation in professional or community programs.

6. After the boss has reviewed the plan with you, forward it to the Management Development office for analysis. It will be returned to you as soon as the data are recorded for common-need determination.

   NOTE: The last column on the Planned Development Sheets, entitled "Evaluation of Development Actions Taken" is your yardstick for measuring development net earnings. As you complete your development activities during the ensuing months, jot down in the evaluation column the effectiveness of the action. (Did the action satisfy your development needs? What type of activity would have yielded more productive results?, etc.)

BOSS

1. Receive from the individual his development plan. Review it and study his described job duties and responsibilities (P. A-4); and his development needs (pp. A-11 to A-14). Prepare to discuss his development needs in light of his present job and his career goals. For those duties, responsibilities, needs, and priorities with which you disagree, make a marginal note for discussion.

2. Arrange a meeting with the individual and the Management Development Office, as appropriate, to develop and/or agree on, development actions. (See item 5 above.)

3. Sign and date the cover page of this plan.

POSITION DESCRIPTION

Please describe briefly your major duties and responsibilities and obtain your boss' agreement on the completeness and accuracy of the list. Moreover, there should be full understanding and mutual agreement concerning the duties and responsibilities that carry the greatest importance to the organization.

Responsibilities*/Duties	Importance Rank (No. 1 = Highest)	Boss Agrees

*Attach an additional sheet if necessary.

PERSONAL CAREER DATA

Please complete the following to help you better determine your short- and long-range development needs.

I JOBS HELD DURING THE PAST FIVE YEARS:

II WHAT ARE YOUR MOST IMMEDIATE CAREER GOALS? (1 to 3 years):

III WHAT ARE YOUR LONG-RANGE (MORE THAN 3 YEARS) CAREER GOALS AND OBJECTIVES?

IV PERSONAL DEVELOPMENT - COURSES, SPECIAL ASSIGNMENTS, SELF-STUDY, SOCIETIES, COMMUNITY SERVICE, AND OTHER ACTIVITIES THAT HAVE AIDED YOUR RECENT GROWTH AND PROGRESS:

A. The Business Climate

1 ☐ Understanding of corporate product lines and goals
- Knowledge of Aerospace Group marketing plans
- Knowledge of Commercial Group products

2 ☐ Knowledge of competition
- Knowledge of competitive organizations
- Knowledge of competitive products

3 ☐ Understanding the customer
- Customer requirements
- Customer organization and decision-makers
- Understanding contract requirements
- Understanding key government regulations
- Establishment and proper use of contacts in the aerospace business climate

4 ☐ Understanding of market analysis
- Martin Marietta's potential versus probable share
- Recognition and exploration of market opportunities
- Understanding and use of market opportunities
- Understanding of methods of conducting market analyses

5 ☐ Understanding different types of government contracts
- Advantages and disadvantages of each type
- Legal responsibilities of executives
- Incentives and their meaning

6 ☐ Sensitivity to social-political-economic trends
- Understanding the current status of public laws and their applicability
- Understanding the effects of the social-political-economic trend to aerospace business
- Understanding the 5-10 year projection for aerospace business

7 ☐ Other_____

_____

B. Policies and Decision-Making

1 ☐ Knowledge of formally stated corporate policy
- Proper application of policy in decision-making
- Understanding how to enforce specific policy in own area of operation
- Understanding what enforcement of specific policies can do to other functional operations

2 ☐ Knowledge of techniques for decision-making
- Limitation of authority
- Limitation of responsibility and accountability
- Use of logic and judgment
- Use of problem analysis
- Selecting alternatives and strategies
- Forcing the decision process to the proper level of the organization

3 ☐ Use of policies in management
- What level should make policies
- Difference between good and bad policies
- Policies - general or detailed

4 ☐ Use of decision evaluation
- Use potential problem analysis
- Understanding effect on existing policies
- Understanding results appraisal and precise measurement

5 ☐ Use of available information for policy and decision
- Understanding how to use the corporation's resources
- Using different analyses as appropriate
- Using others for advice

6 ☐ Other_____

_____

_____

1 ☐ Understanding selection and staffing
- Determining manpower requirements
- Sources of internal and external personnel
- Interviewing and screening applicants
- Determining proper job classifications and rates
- Proper orientation of the new employee
- Handling the problem of overstaffing
- Attracting candidates by improving corporate image

2 ☐ Understanding upgrading of present staff
- Assessment using psychological tools and techniques
- Handling the low-rated performer
- Challenging the high-potential employee
- Using employee ranking
- Using appraisal system effectively

3 ☐ Development of personnel
- Determining the development needs of the organization
- Establishing a total manpower development plan
- Understanding development techniques
- Development of backup
- Preparation for specific jobs
- Planned development for promotion

4 ☐ Using techniques for individual motivation
- Manager-subordinate relationships through counseling
- Personal recognition methods
- Profit sharing
- Personal incentives based on individual differences
- Stretching out to achieve mutually set job objectives
- Reassignment for work satisfaction through more responsibility
- Job enrichment through job redesign for personal satisfaction and growth

- Knowing group motivation techniques and their value
- Use of UMPIRE and Zero Defects
- Inter- and intra-department competitions
- Recreation program

6 ☐ Other _____

_____

_____

D. Interpersonal Relations

1 ☐ Understanding balanced relationships with boss, other managers, and subordinates
- Understanding own responsibilities
- Understanding own place in the organization
- Understanding each person's individual differences

2 ☐ Understanding the Martin Marietta Manager's role
- Customer image awareness
- Suppliers' image awareness
- Public image awareness

3 ☐ How to project an image of respect to all that he contacts
- Friendliness and cooperativeness
- Helpful attitude
- Stimulating others to positive and creative endeavors
- Personal integrity
- Encouraging subordinate self-development

4 ☐ Understanding the importance of being sensitive and alert to reactions of others
- Empathy for others
- Sensitive to others and their needs

5 ☐ How to take issue tactfully in a persuasive manner without becoming antagonistic
- Calm attitude
- Sincere in showing positive emotion
- Practicing tactful aggression

- Admits error when proved wrong

8 ☐ Disciplines subordinates properly
- Use of constructive criticism
- Disciplines privately
- Recommending changes in behavior

9 ☐ Using the chain of command properly -- sensitivity to bypassing organizational levels

10 ☐ Other_____

_____

_____

E. Self-Development

1 ☐ Periodically performing self-analysis to establish realistic personal goals and self-confidence
- Logic
- Creativity
- Ingenuity
- Flexibility
- Resourcefulness
- Alertness

2 ☐ Understanding the importance of physical stamina in crisis situations
- Corrective health measures
- Annual physical checkups
- Establishing physically active recreational pursuits

3 ☐ Purposely stretching out for broadening responsibility
- Continuing education in a professional field
- Establishing a personal reading/study plan
- Using job rotation to gain a breadth of managerial experience
- Using special projects or assignments to learn of other organizational functions

- Publishing and/or presenting papers
- Talks to local gatherings

5 ☐ Understanding technical disciplines
- Technical aspects of Corporation products
- Technical aspects of present research

6 ☐ Management theories
- Management by exception
- Management by objectives
- Theory X vs Theory Y
- Managerial grid

7 ☐ Understanding other Division functions
- Manufacturing
- Marketing
- Quality
- Contracts
- Engineering
- Mission Success
- Financial
- Legal
- Materiel
- Project
- Administration
- Professional and Industrial Relations
- Research & Development
- ETR and WTR

8 ☐ Self-Improvement
- Enthusiasm
- Speed reading
- Vocabulary
- Effective memory
- Effective listening
- Effective writing

9 ☐ Other_____

_____

1 ☐ Understanding uninhibited and effective communication -- vertically and horizontally
- Communication from peers to subordinates
- Need to keep all concerned fully informed of important and appropriate matters
- How to coach or counsel subordinates
- Using commendation
- Using discipline
- How to motivate through communication
- How to encourage communication from superiors and subordinates

2 ☐ Understanding oral and written communication
- What information should be in writing
- When to write procedures
- Understanding how to use interdepartmental communication
- How to use oral communication with individuals and groups

3 ☐ Practicing sound communication principles in both composition and presentation
- How to plan and organize communications
- How to sell ideas effectively, either verbally or in writing

4 ☐ Using proper organization channels of communication
- Sensitivity to bypassing intermediate management
- When and how to pass information and instructions down through management
- When and how to talk to groups
- When and how to make important announcements

5 ☐ Other_____

_____

_____

1 ☐ Understanding the basic techniques of planning and control
- Using the long-range plan in functional planning
- When and how to use Gantt charts
- Input-output charts
- Using PERT time and cost
- Using "Planned Value of Work Accomplished"

2 ☐ Organizing work and developing a good plan
- Improving proper planning versus reacting
- How to obtain maximum effectiveness and use of personnel, facilities, dollars, and other resources
- How and when to use work breakdown structures
- Proper work statements
- Key items and milestones
- Understanding logical sequence
- Understanding the need for a minimum of details
- Balancing logical tradeoff of time, cost, and schedule

3 ☐ Controlling to the plan
- How and when to use status reviews
- Understanding exception reporting
- How to use early problem determination for implementation of corrective action
- How and when to use tab reports
- How and when to use chart rooms
- Understanding customer reports
- How to present status information

4 ☐ Effectively monitoring work of subordinates and the organization
- How and when to use early problem identifiers
- How and when to use key check points
- Using random sampling as a monitoring technique
- Using accurate and timely report feedback
- How to measure results

5 ☐ Understanding and using Management by objectives and results
- Putting in writing the objectives to be accomplished in terms of results
- Laying out a program for each objective
- Securing understanding and approval of the manager's superior
- Communicating these objectives to subordinates for their detailed programing
- Defining the limits within which subordinates can operate
- Defining evaluation devices to determine progress

6 ☐ Other _____

_____

_____

H. Organization and Delegation

1 ☐ Organizing personal work efforts
- Separating the forest from the trees
- Distributing own time to best advantage
- Placing proper personal emphasis in line with priorities
- Covering all segments of personal responsibility

2 ☐ Establishing effective organization
- Understanding the dangers of competition and/or conflict between organizational elements
- Defining responsibility and authority
- Proper spans of control
- Effective chain of command
- Program, line, and staff coordination
- Proper balance of skill and classification levels
- Cost factors

3 ☐ Understanding the process of delegation
- Delegation as a motivational tool
- Analysis of key tasks and priorities
- How to make clear-cut assignments
- Extending decision-making down the line
- Determining what and how much to delegate
- Determining to whom to delegate

4 ☐ Organizing to achieve organizational objectives
- Developing the organization structure to achieve objectives
- Delegating by functional responsibility
- Establishing organization team relationships

5 ☐ Other _____

_____

_____

I. Development Write Ins Use for Short- or Long-Range Development Needs.

1 ☐ _____

_____

2 ☐ _____

_____

3 ☐ _____

_____

4 ☐ _____

_____

5 ☐ _____

_____

6 ☐ _____

_____

7 ☐ _____

_____

8 ☐ _____

_____

9 ☐ _____

_____

10 ☐ _____

_____

Priority Rank Order	DEVELOPMENT NEEDS (Use Development Reminders Checklist. Identify needs by letter & number. Write in the specific subitems or needs.)	DEVELOPMENT ACTIONS AGREED UPON (By the man & his boss - and Management Development, when needed).	TARGET DATE	EVALUATION OF DEVELOPMENT ACTIONS TAKEN
☐				
☐				
☐				
☐				
☐				
☐				
☐				
☐				

APPENDIX B: SELECTED RESULTS FROM 1969 PROJECT MANAGER SURVEY

SURVEY OF WEAPON SYSTEMS ACQUISITION MANAGERS/PROJECT MANAGERS

1. A survey of weapons systems acquisition managers/project managers was conducted in late December 1969 and early January 1970 in conjunction with studies being undertaken elsewhere in the Navy to improve project management.

2. The study was conceived and the questionnaire constructed in the Active Officer Plans Branch of the Bureau of Naval Personnel and distributed by the Chief of Naval Material. One hundred twenty-four responses had been received at the time of the statistical summarization. Subsequently nine responses have been received. Selected comments are incorporated in enclosure (5); the statistical results are not significantly altered by these latest arrivals. The results were tabulated and the conclusions drawn in the Active Officer Plans Branch.

3. The general conclusions of the survey are as follows:

a. Generally, there is no requirement to establish a subspecialist in weapon systems acquisition management/project management in the unrestricted line, or a specialist in the restricted line or staff. However, two shore tours for an officer in the area of weapon systems acquisition management are considered the minimum desired, and would in effect make a subspecialist of an officer in that area. It is desirable to have greater consistency in the preparation of project managers than now obtains.

b. There should be greater emphasis in graduate school on the areas of business administration/management, probably at the expense of some of the more technical courses.

c. Better preparation of project managers could be accomplished within the framework of existing career patterns. Following graduate school an officer should have one preparatory tour in weapons system acquisition management either at the NAVMATCOM or SYSCOM level, before being assigned as project manager as a higher ranking officer.

d. Although few respondents to the survey believed that we should continue to develop WSAM/PM as at present, the consensus of corrective actions proposed showed a desirable pattern of development not significantly different from that which now takes place.

e. Special courses, such as the 10 week DWSMC course at Wright-Patterson AFB, were considered highly desirable, but not essential. It was felt that they should be given before or during the first tour in WSAM.

f. Periodic seminars with industry would be desirable for those in WSAM/PM, but such seminars were not considered essential.

g. There was little unfavorable reference to the quality of officers now assigned to WSAM/PM. The lack of adverse mention is consistent with the GAO report on project management

h. Additional inducements are needed to attract top flight officers to a career in WSAM/PM. Better opportunity for promotion to flag rank is the most important inducement in the eyes of captains in the WSAM/PM business, but close behind better promotion is the development of a system of recognition for good project managers, a better working environment, including clearer organizational relationships and more authority for project managers, some additional training, special responsibility compensation, etc.

4. Enclosure (1) contains a profile of the desirable project manager. The survey questionnaire is attached as enclosure (2). A synopsis of the comments considered most germane appears as enclosure (3). In addition to the tabulations of data that appear as enclosure (4), a selection of individual comments from all participating grades and communities is contained in enclosure (5).

5. List of enclosures:

(1) Desired profile of a project manager

(2) Survey questionnaire

(3) Synopsis of conclusions from statistical data

(4) Tabulations of answers to questionnaire

(5) Individual comments of selected survey respondents.

DESIRED PROFILE OF A PROJECT MANAGER

1. An above average officer who has a graduate degree in a technical engineering area, in business administration, or in management.

2. One tour in the Washington area in weapons systems acquisition managment below the project manager level. The tour would probably be as a lieutenant commander or commander, and would be served in the Naval Material Command or in a Systems Command Headquarters. It would be 2-3 years in length.

3. During the course of the tour in 2. above the officer would be sent to the 10 week DWSMC course at Wright-Patterson AFB.

4. Either during graduate school, or perhaps during Navy-sponsored night courses, the officer would complete a special course in contract law.

5. The tours of duty on a ship, in a squadron or on a fleet staff are considered sufficiently important to the development of attitude that they should not be eliminated for officers in project management.

6. The project manager, usually a captain, should be assigned as at present, that is, assigned by BUPERS to a command, and assigned within the command to a project manager position if so desired by the command.

7. While in the position of project manager, the officer should be afforded the opportunity for periodic seminars with industrial counterparts if he so desires.

8. The project manager should remain in the position for several years, and timing of his relief should coincide with milestones in project development. The GAO has suggested that the officer be a project manager for as long as 4-5 years. No respondents to the survey advocated such a long time, perhaps because it would prevent an officer from being ordered to the jobs considered essential to remain professionally competitive for flag rank.

9. By virtue of his service as a project manager, which some consider the equivalent of a major command, the project manager would be given some choice of duty assignments upon being relieved.

ENCLOSURE (1)

SYNOPSIS OF CONCLUSIONS FROM STATISTICAL DATA

TABLE I. Most project managers seem to serve in that capacity in the grade of captain. Together the restricted line and supply corps out-weight the URL as a source of project managers.

TABLE II. Discounting LCDRs, which are skewed by the small sample, the average project manager serves slightly over two years as a project manager. There is no significant difference in tenure for officers of different designators.

TABLE III. Of the 85 respondents reporting occupying billets at the project manager level or above, 51 had had WSAM billets below the project manager level beforehand.

TABLE IV. Of the 85 respondents reporting occupying billets at the project manager level or above, 34 had never occupied WSAM billets before-hand.

TABLES V. & VI. 76 or 124 respondents had had experience below the project manager level. The inexperienced types were spread among all communities fairly equally percentagewise. Average experience was 2-3 years.

TABLES VII. & VIII. Question three asked respondents to list up to five previous assignments ranked by their relative importance to preparation for WSAM. Types of assignments are displayed by number of times mentioned in Table VII and by value of experience as preparation for duty in WSAM in Table VIII. Unrestricted line officers reported twice as many operational (ship, squadron, etc.) assignments as material command headquarters, and rated the former low as WSAM expertise - builders while rating (as was generally the case) the material command quarters assignments highest. The 140X community reported NAVMATCOM field assignments more than twice as frequently as headquarters assignments, but rated the headquarters duty consistently higher than field duty in building WSAM expertise. The restricted line and supply corps, taken together reported more field experience than headquarters-type experience in the MATCOM, but rated the headquarters experience generally higher. With some exceptions, duty under instruction in graduate school or in specialized training, when reported as among the most important (to WSAM expertise) five assignments, generally did not rate as high as duty in a MATCOM headquarters assignment.

TABLE IX. While question three obtained information on the type billet experience actually possessed by the respondents, question four asked what kind of experience would have been preferred as more effective preparation for WSAM duty. The results showed a very strong preference, in hindsight, toward MATCOM headquarters-type assignments, consistent with the

high ratings of headquarters duty among those reporting same. Also preferred more than not were duty under instruction and duty at OSD or OPNAV. In order to obtain WSAM-preferred duty, the respondents would have preferred to have fewer operational tours, about the same MATCOM field activity (net) and fewer miscellaneous tours (e.g., NAVSTA, NAS, NAVSUPPACT, etc.).

TABLE X. Of 89 respondents with masters degrees or higher, 60 were degrees in engineering or architecture, and 21 were in business administration or management. Four URL officers had masters degrees in math or science.

TABLE XI. All but 4 or 89 respondents with masters degrees or higher felt that the graduate education significantly enhanced the competence of the respondent as a WSAM.

TABLES XII &XIII Priority of desirable graduate level education in terms of importance assigned by respondents placed business administration/management in first place, followed by engineering/architecture/metallurgy as a close second. Ops analysis was a weak third, followed by contract law, and math/science. The strong showing of business administration/management, despite the fact that only 21 of 89 respondents had degrees in the business administration/management area, is significant. Also significant is the relatively strong emphasis placed on contract law by all respondents.

TABLES XIV. In retrospect, 48 of 124 respondents would have desired additional education in the area of business administration-management, 14 in engineering-architecture, 11 in contract law, 3 in operations research-systems analysis, and 1 in math-science. A total of 49 said no additional education was necessary. The heavy emphasis on bus. adm.-management was common to both the restricted line and the unrestricted line.

TABLE XV. Retrospectively, 32 (one-quarter) of all respondents indicated that they thought attendance at the SPM course at Wright-Patterson would have been desirable. By contrast 40 thought a course in procurement or contract law would have been desirable, and 11 training in computers, 7 in logistics and supply systems. 40 thought no other additional training was required.

TABLE XVI. 21 respondents thought that the Wright-Patterson course should be given prior to assignment as a project manager. The best time for attendance was estimated to be in the eleventh to fifteenth year of commissioned service; EDO officers were most in favor of the course. The course is not considered adequate preparation by itself for PM.

TABLE XVII. Only 12 of 111 respondents felt that project managers are born, rather, than made, but the 12 included 3 flag officers. The conclusion that can be drawn is that personality traits and character play an important part in the definition of a good project manager, and that for some people such traits are more important than education and training. It can be inferred that high ranking officers, in assigning subordinates as project managers, will give heavy emphasis to personality, even to the exclusion of background.

TABLES XVIII. & XIX Few respondents felt they were by themselves competent to handle the variety of problems that confronted them as a project manager. The types of people upon whom they were most dependent for staff assistance were technical engineers and quality assurance (86 mentions), procurement or legal (62 times), financial (36 mentions), and management and administration (33 mentions). The flag officers, however, were most heavily dependent on procurement and legal assistants. Very few did not consider themselves dependent upon their staffs for one type of expertise or another. Those depended upon for special expertise tended to be civilian in 172 of 268 cases and were either captains or GS-15 and above in 80 of 268 cases. Supply Corps officers represent the community most frequently mentioned with 27 of the 68 officers who were identified by designator.

TABLE XX. Question twelve invited comments on how future project managers should be developed, by type community and by emphasis (technical or managerial). Table XIX summarizes the replies. Unrestricted line officer respondents generally voted about three times for development of future WSAMs in the URL for each vote for development in RL/Staff Corps. RL/Staff Corps respondents generally voted about three times for development of future WSAMs in the RL/Staff Corps for each vote for development in the URL. The possibility of establishing a new community was not viewed with favor. In general the consensus is development of future WSAMs in existing URL and RL/Staff Corps with greater emphasis on management education than has been reflected in the current profile of the repondents.

TABLE XXI. 28 of 113 respondents felt that assignment to WSAM was not as career enhancing as other forms of duty to which they might have been assigned. All the admirals felt that WSAM was career enhancing, but since many admirals did not enter the field until they had achieved flag rank, their attitudes may be colored. Significantly, 24 of 81 captains felt that WSAM wasn't the most career enhancing type of duty. The feeling, although strongest

in the unrestricted line and supply corps, was also in evidence in the engineering communities, where project management apparently may be undertaken at the expense of other key assignments.

TABLE XXII. Only 36 of 116 respondents felt that periodic seminars of a few days duration would not be worthwhile in updating project managers.

TABLE XXIII. Suggested inducements to making a career or secondary career in WSAM in order of frequency of mention included; better promotion to flag rank (38), more recognition and better image of WSAM (33), none (29), better working environment, including organizational relationships (22), and an established career pattern (16). The greatest number of officers suggesting inducements were EDOs.

TABLE XXIV. Other suggestions for improving WSAM included the following in order of times mentioned. A prior tour in WSAM before the PM tour (35), a viable career pattern for officers in WSAM (32), more formal education (25), more training in WSAM (20), retain the operational background of WSAMs (19), better quality input (12), establish a CNM add-on course of instruction (12), longer tour length and better relief timing (11), improved working conditions (11), and more recognition (9). To flag officers, the most important actions to be taken were a tour in WSAM prior to the PM job and a more viable career pattern. Officers in all communities were worried about the lack of an established career pattern in their community that would keep them competitive while in WSAM.

SUMMARIZED ADDITIONAL SUGGESTIONS

FLG 110X *1. Pick top performers from among top 1/3 academically. Top performance has priority over "brains." 2. Send to school like DWSMC to learn the "language" and routines currently "in vogue." 3. Work in a project - not incharge until at least a commander and has already served in a material type job. 4. After next tour away from Washington material projects with continued outstanding performance, let him "carry the ball," on a project of his own. "One last 'acid' remark I might add - if BUPERS were to assign officers to the NMC on an equal basis with OPNAV and other 'higher priority' areas, you would go a lot further in solving the problem rather than trying to figure out a scheme to 'develop' Project Managers."

FLG 1100 *As in industry, the Navy should actually provide periodic continued schooling - for example, in computers, contract procedures, technical field updates, etc. Gaps should be filled in the technical officers training and he should be keep up to date. The Army and Air Force are ahead of us in this regard.

FLG 1400 *...Believe course at Wright-Pat is the best training available but it could be improved by the addition of a CNM-sponsored and designed addendum, aimed at Navy organization and procedures/ techniques.

FLG 140X *PM's too often view their offices as a specific mechanism created for the purpose of ignoring all of the normal processes and procedures which govern acquisitons, rather than for expediting such processes and procedures by concentrated management attention to them for particularly important acquisitions. As a consequence we are plagued by a host of problems caused by shortcuts and expedient waivers of good practice, adopted in the name of PM importance and urgency: non-competitive proprietary situations, undue and unwise concurrency of development and production; prematurely forced decisions in order to meet impossibly compressed schedules; and the results of contract changes, "cost growths," delivery delays, etc... The curricula upon which we rely to train and educate the PM must therefore find room to give a balanced stress to precisely the same areas which are required by competent managers of any enterprise: industrial organization, theories of organizational endeavors, personnel selection and management, etc. -- with plenty of emphasis on the necessity to learn about and use the talent and experience in the rest of the organization.... I commend the Harvard Advanced Management Program (AMP)...

FLG 1510 *Need a better selection process for incumbents. It is unsatisfactory for a first tour in a SYSCOM to be as a Project Manager. The PM assignment should come no sooner than a second tour. On the job experience is needed as a LCDR or CDR. Need a higher fraction of the better qualified unrestricted line officers in the SYSCOMs. No school can make up for a lack of first-hand experience.

FLG 1510 *I entered the F111B program as Project Manager with some lack of knowledge and details which I would have gained in one good project management tour as a commander. My experience was in peripheral support areas to the aircraft business rather than directly in aircraft development.... Conclusion: Book learning is great but experience is the best teacher... Must have a mix of URL and RL. URL career in WSAM could be (1) Fleet, (2) Technical PG School, (3) Fleet, (4) SYSCOM (3 years as LCDR or junior CDR with the Wright-Pat System Program Mgmt enroute, (5) Fleet, (6), SYSCOM as deputy project manager. Additional training in Contract Administration and Financial Management. Restricted line career could be similar, except (5) could be on a fleet staff or a NPRO. ...The real key is item (4) - the early tour in the SYSCOM...experience acquired in nuts and bolts - paperwork - negotiations - pitfalls - so that when he takes over the helm as a captain he doesn't have to be burned to learn.

FLG 1510 *...By increasing the AEDO community to its legal limit we will have an assured supply of competent WSAMs in the future.

FLG 1700 *Process is similar to developing flag officers - sufficient quality personnel must be given broad development to qualify for the assignment so that the higher authority making the selection has 2 or 3 reasonable alternatives from which to choose. Promising officers must be given jobs which enable them to observe the "mystique" of being a top flight PM. However there is no substitute for watching their performance under fire.

FLG 3100 *(a) The Navy should be looking for managers not technical experts or functional specialists as project managers, regardless of designator. WSAM requires management skills and a comprehension of the functional skills of industrial management, procurement, material management, maintenance management, and personnel management, with a thorough understanding of the shipboard environment. To expect that we can develop modern managers plus technical/functional specialists and experts is an impossible goal. ...shipboard experience is a necessity and such experience is not substitutable in the material management environment. (b) Our problem is one of trained managers not one of technical or functional skills. WSAM is an integrated process and the project manager does not have to be an expert in all elements

with no other allegiance, (5) responsible to only one superior, shielded from unlimited inquiries, (7) free of all outside and personal responsibilities, (8) office space conducive to after hours work - key project personnel at least able to park a car to be free of car pools.

CAPT 131X *PM needs inherent qualities: determination, persistence, trenchout personality, the ability to reduce complex problems to clear cut issues, a sense of humor and resilience. PM needs trainable qualities: operational background to protect the user interest, engineering background - at least Masters degree in Engineering, knowledge of Defense Department and congressional organization, interrelationship, etc. Imperitive is at least one tour in Washington in a Project Officer or Assistant Project Manager's billet fairly early in the candidates career for orientation purposes. "Someone once told me that the last perfect project manager died on the cross."

CAPT 131X *Key rotation from specific billets in the NMC to project milestones - or else "life of the project."

CAPT 131X *Get top officers, understudy existing PM for 6 months prior to assuming responsibility. Highly recommend ICAF.

CAPT 131X *PM needs education and experience - especially the nitty gritty of getting the job done. Management education such as ICAF is on too lofty a level - it ignored Navy vs. contractor infighting. Contractor knows more than Navy representatives. Education should be management oriented, including enough technical dope to speak the same language as the contractor's plant vice president and general manager. Must include financial management. Must include DOD procurement management. Experience should come through introduction at the deputy or lower level, and must include exposure to (1) contractor - Navy negotiations, (2) planning, and (3) day to day infighting. Some experience as THE BOSS (e.g., a command tour). The community from which project managers are drawn is unimportant. We don't manage buying as well as contractors manage selling.

CAPT 131X *Establish a career pattern for WSAM. Would say the opportunity for flag selection is the most career motivating. If the line officer who has repetitive tours in WSAM while onshore duty can be assured of equal competition with line contemporaries for flag selection, believe that more junior officers in the line could be drawn into the field.

CAPT 131X *You cannot make a career of WSAM and any URL officer who makes a secondary career in R&D is dead. Pick people who have a reasonable educational background (bachelor's degree is plenty) and who have demonstrated in command billets that they can direct the efforts of other people and manage the use of material resources.

CAPT 131X *Establish one-week yearly refresher courses in the acquisition management process.

CAPT 140X *At least one tour in a field activity relating to WSAM. Operational experience in weapon system. Special attention to contract law (most important!). Advanced management program at Harvard. Lengthy turnover. Broad backgrounds produce the best project managers, but with 1. Contract administration (including contract law), 2. Project management, 3. One tour at SUPSHIPS, 4. One tour in a project office. Also - leadership qualities are important.

CAPT 1400 *Project management is to the restricted line officer what command at sea is to the unrestricted line officer. Is sought after by restricted line officers. Good engineering education is a fundamental basis and management - practicing billets vice staff or technically oriented duties. Officers who consistently seek these latter duties rather than those of great responsibilities and broad scope are perhaps least well qualified to be project managers.

CAPT 1400 *Formal training is secondary to experience in WSAM. Experience should be gained by tours of successively increasing importance in both acquisition management and contract administration. In the case of ship acquisition and/or repair such as that gained on the waterfront of a naval shipyard is also of great value. In any event WSAM in a career specialty.

CAPT 1400 *PMs should have broad experience. Highly specialized individuals do not, generally, have the balanced view required of a PM and should stay in their specialty. (1) Treat PMs as major commands, (2) Identify billets from LT to CAPT in WSAM, and (3) Test and select officers at successive levels of responsibility leading toward assignment as a PM. Recommend executive advancement policy of certain large companies be investigated as a source of ideas, (e.g. A.T.&T.)

CAPT 1400 *Bring future PMs up through acquisition projects where they will progressively learn the ropes of WSAM. For 1400s, start the career about LT (after engineering PG), should include 2 prior project tours supported by short functional courses. Hence a 1400 Captain would be well prepared to take over a project, given sufficiently good previous performance.

CAPT 1400 *(1) Add a course in certain PG curricula which will acquaint officers in their formative stage of this vital type billet. (2) Provide courses of instruction or lists of courses available to the prospective project manager. (3) Prepare check lists, guides, command sponsored courses or seminars to relate and compare the aspects of project management which appear in each job. For example, contracting - types of contracts, shipbuilding in public versus private yards; Financial management -

types of funding, NavSHIPS involvement, secondary management involvement, Naval Shipyards, SupShips; specification preparation. Believe much can be done to make the workplace a good training ground.

CAPT 1510 *No magic formula; careful personal selection based on proven ability in other billets, plus adequate operational and educational backgrounds; sufficient overlap of assignment, prior Washington experience - preferably in the material side of the house.

CAPT 1510 *Feel very strongly that the Navy has suffered considerably because of improper or delayed decisions by PMs. Recommended we have a well-planned training program - formal and on-the-job for the Navy's PMs. Navy rotates "trained" managers out of the business too frequently and suffers until the next generation of managers get the "feel" as to exactly what their responsibilities are.

CAPT 1510 *In general the Navy does a fine job in PM. Could use more functional training and orientation into the Washington scene prior to being placed into the center of things, but not essential. My only problems stemmed from personal bias and friction between people coupled with strong desire of certain individuals for personal acclaim and credit at the expense of all else. That is to say my only problems were people problems.

CAPT 1510 *Very high degree of motivation needed in the field of application of the weapon system. Needs a deep understanding of objectives of the weapon system and a "built-in feel" for the relative impact on the attainment of that objective which could be caused by each of the program elements such as technical performance, reliability, maintainability, training, people, schedules, etc. He is very likely a "specialist" in his particular functional area of warfare. It should be noted whether he is a specialist by choice or inertia. Very effective to employ the fleeting-up method. About 1 year prior to PM detachment, his relief should report in. The incumbent should participate in the selection of his relief.

CAPT 1510 *1510 officers have too many tours of duty out of the Washington area - should be distributed about 50:50. Fleet staff type assignments should be given to P-coded 1310 officers who have had Washington tours in fleet readiness and logistics billets of NAVAIR, NAVORD, NAVELEX, etc, or CNO, NAVMAT. The types of education and experience enjoyed by corporate officers and PMs should be the guide. Civil service should not be a source of PMs for Navy or DOD. Reduction in numbers of civil service or appointed civil service officials in the DOD would be good - more direct access. Layering of procurement

officials - eliminate. 3-6 months overlap on relief, which should be tied to major program risk areas. A change in PMs usually is accompanied by a fresh look and new approach, which is good. Largest problem the PMs face is overlong duration of civil service tours and varying amount of attention received from the civil service of the functional division (NAVAIR, NAVORD) to program priorities.

CAPT 1510 *One cannot become a procurement expert in the unrestricted line due to time required. Need both technical and management education. A LCDR (or junior) tour in a program office, class desk, or project office billet of NAVAIR gives practical experience. Propose a procurement subspecialty.

CAPT 1700 *Reduce the influence that business administrators with their plethora of "paperwork systems" have had on the manner of conducting program management.

CAPT 1700 *As a relatively junior captain, I am about to take over AEGIS - purportedly the only going weapons program in the surface Navy today - to go as high as $2 billion - $260 million R&D. I am being saddled with a management team, not on my own choosing, with a technical approach, many aspects of which I don't agree with, in a program that really is financed to a level of only $35 million. I am being asked to leave my present job in California to return to Washington at what I estimate to be a constructive pay cut of $300 a month (I can prove it!) under working conditions that not even longshoremen unions tolerate. I read in the paper every day how I will be "totally responsible" - we all know that not to be true. Further I must take the constant harassment of DOD and Congress. My counterpart at RCA was just made a VP. Until you correct these inequities you will not get more competent people. As such, then, a graduate or training program is a waste of time. Amongst my contemporaries I don't know a single one who wants to be a project manager.

CAPT 3100 *Increase PM responsibility as education progresses in this area and as career development tours are assigned.

CAPT 3100 *Should have business management, procurement, and applied science skills. WSAM should possess the conglomerate skills of line and staff. The happy combination of a respect for and a familiarity with realities of operational requirements - tempered and honed with the professional buisness skills of the staff corps officer. lacking personnel with all the foregoing qualifications, I would suggest for the interim heavy emphasis on staff corps business managers as an acquisition managers, adequately supported by technical and operational personnel.

CAPT 3100 *(1) WSAM should be EDO and Supply Corps officers. URL OFFICERS should retain their operational specialties and traditional route of training, education and promotion opportunity leading to the peak at CNO. (2) WSAM should attract similarly competent officers with equal although differing education, training and promotion opportunity with a peak at CNM. (3) Cross-fertilization is necessary - especially for the URL - not so much for EDO and SC officers in WSAM. (4) The WSAM field is too large to expect full competence in all areas by all individuals.

ENCLOSURE (5)

APPENDIX C: REPORT OF WEAPON SYSTEMS ACQUISITION MANAGER STUDY

DEPARTMENT OF THE NAVY
BUREAU OF NAVAL PERSONNEL
WASHINGTON, D. C. 20370

IN REPLY REFER TO
Pers Ag-snw
28 APR 1970

From: Chief of Naval Personnel
To: Chief of Naval Operations
Via: Chief of Naval Material

Subj: Career Development and Selection of Weapon Systems Acquisition Managers

Ref: (a) CNP memo Pers Ag of 4 Mar 1970
(b) SECNAVINST 5000.21A
(c) Navy Programming Manual (OP 90P-1C)

Encl: (1) "Major Command" equivalency for Project Managers
(2) Selection, ordering and tour lengths of Project Managers
(3) Adequacy of functional WSAM training
(4) Postgraduate education for Project Managers
(5) Project Management subspecialty

1. In response to requests from the Chief of Naval Operations and Chief of Naval Material, a staff study of Career Development and Selection of Weapons Systems Acquisition Managers (Project Managers) has been conducted. Reference (a) was a progress report of the study effort and this is the final report.

2. A summary of recommendations follows:

a. Major Command Equivalency

Project Manager positions for all Captains for CNM/SYSCOM designated projects for which Charters are prepared as prescribed in reference (b) should be recognized as "equivalent to Major Command" for promotion purposes. Enclosure (1) sets forth recommended administrative procedures for accomplishing this by fitness report entry. Similar procedures are recommended for Program Coordinator positions (designated as prescribed in reference (c) for Captains in the Office of Chief of Naval Operations.

In addition, the Secretary of the Navy should continue to provide guidance to Flag Officer Selection Boards by stressing the need to select officers who are best fitted for future assignment even though their past assignments may have been outside the norm of traditional career patterns. Such guidance will do much to influence young officers to aspire to serve to this emerging area of endeavor.

Subj: Career Development and Selection of Weapons Systems Acquisition Managers

b. Selection, Orderwriting, and Tour Lengths of Project Managers

Project managers should be selected by board action. In addition, administrative procedures associated with orderwriting, such as enroute training and turnover time, should be formalized to ensure project manager continuity. Enclosure (2) sets forth recommended procedures for accomplishing this.

c. Adequacy of Functional Training

The project manager's course at the Defense Weapons Systems Management Center, Wright-Patterson Air Force Base, appears adequate and Navy quotas have been fully subscribed in the past. The provisions of enclosure (2) will ensure greater utilization by prospective project managers. Enclosure (3) contains a discussion of the course.

d. Postgraduate Education for Project Managers

Existing technical education programs are adequate for those projects which require emphasis on engineering principles. Where managerial skills are more dominant, the more appropriate education is a combination of technical background followed by graduate education in the field of management. The following specific actions are being taken in support of the above conclusion:

(1) The existing Management curriculum at the Naval Postgraduate School will be strengthened in the Material Support option to provide as much emphasis as possible in Weapons Systems Acquisition.

(2) The Naval Postgraduate School is developing a curriculum specifically tailored to weapon system acquisition management. Enclosure (4) contains a description of this new management curriculum which will be offered to officers with technical undergraduate education.

e. Project Management Subspecialty

If the new management curriculum is approved for implementation, it will serve as an educational basis for a new subspecialty in the engineering management area. Thus an URL Officer could serve approximately three years in project management or related billets in both the Lieutenant Commander and Commander grades while still maintaining his warfare specialty. Limited numbers would serve an additional tour at the junior Captain level. Project Managers would then be selected from among those officers of all designators with the desired mix of experience and education. Enclosure (5) sets forth the details of this proposal.

3. The above areas represent those actions which are under the cognizance of the Chief of Naval Personnel.

CHARLES K. DUNCAN

Copy to:
VNCO
COMNAVSHIPSYSCOM
COMNAVAIRSYSCOM
COMNVELECSYSCOM
COMNAVORDSYSCOM
SUPT PG School

"Major Command" equivalency for Project Managers

I. Procedures for Major Command equivalency determination in the case of CNM/SYSCOM designated projects.

A. The Chief of Naval Material will forward a copy of the project Manager charter (prepared in accordance with SECNAVINST 5000.21A) to the Chief of Naval Personnel with a request for Major Command Equivalency determination.

B. The Chief of Naval Personnel shall:

1. Review the charter and determine if the position is equivalent to Major Command. The charter will be retained for use in selection of officers to be Project Managers.

2. If approved as Major Command equivalent, certify to CNM that the position is equivalent and request the following entry be made in the fitness reports of the Project Manager. "This officer is filling a Project Manager billet which has been determined by the Chief of Naval Personnel (reference CNP certifying letter) as being equivalent to Major Command for promotion purposes."

3. Authority to make the above entry shall continue until project management is terminated and management direction and control over specific functions is relinquished to supporting or operating organizations in accordance with paragraph V.B.2. of DOD Instruction 5010.14, at which time authority is automatically revoked.

Enclosure (1)

Selection, Ordering and Tour Lengths for Project Managers

I. Procedures for selection of Project Managers

A. Project managers will be selected by board action in accordance with procedures to be established by the Assistant Chief of Naval Personnel for Personnel Control. CNM and SYSCOM representatives in the Bureau of Naval Personnel will be members of the selection board.

B. The following procedures are recommended:

1. Newly designated projects

a. Selection of project managers for newly designated projects shall be initiated by the CNP upon receipt of the Project Manager Charter (or advance notification pending charter completion).

b. In the event the CNM desires to place an officer from within his command in a newly designated project manager position the nomination shall be requested from the CNP concurrent with transmittal of the Charter or advance notification pending charter completion. The nomination will be processed in accordance with selection board procedures mentioned above. In the event the nomination is not approved by the board, fitness report entries regarding major command equivalency shall be withheld until the position is filled with an officer who has been selected by the Board.

2. Projects for which a relief is required.

a. CNM or appropriate SYSCOM Commanders shall initiate a request for the relief of assigned project managers and forward to the CNP via the chain of command. The prospective relief date shall be keyed to major project milestones. Turnover time and enroute training shall also be specified.

b. Upon receipt of the request the CNP will initiate Board action to select a nominee. The selectee will be ordered to report to the appropriate command as project manager of the specified project via the Defense Weapon System Management Course unless he has previously attended.

II. Tour lengths for Project Managers.

A. The initial tour length of Project Managers shall be set at three years, with extensions beyond three years depending on the status of the project. Requests for extension shall be originated by the CNM or appropriate SYSCOM Commander.

Enclosure (2)

Adequacy of Functional WSAM Training

1. Functional training provides a foundation upon which the prospective project manager builds his experience. The Defense Weapon System Management Center course, Wright-Patterson Air Force Base, provides this functional training. Attempts to determine changes necessary to satisfy all potential users were unsuccessful. A description of the present topics covered is included in Appendix I for information purposes

Navy quotas at this school have been fully subscribed in the past. The recommendations contained in enclosure (2) will provide more immediate utilization of graduates of this course. Additional utilization of this curriculum will occur as a result of the increased Navy emphasis on weapon system acquisition management.

The changes proposed by the DOD review group for this course have been considered in formulating the above recommendations.

The acceptance of a new subspecialty category will result in a revision of certain formal educational offerings. The proposed curriculum, currently being developed in detail at the U.S. Naval Postgraduate School and tailored toward weapon system acquisition management, is described in enclosure (4).

Enclosure (3)

Defense Weapon System Management Center

Project Manager's Course

1. This course is ten weeks in length and is taught at the Wright-Patterson Air Force Base, Dayton, Ohio. The course is non- accredited. It is designed primarily for officers enroute to project management related billets.

2. The first three weeks of the course are devoted to giving background material and a basic understanding of the tools and techniques required before starting consideration of the life cycle of weapon system acquisition. Topics covered are listed below.

Curriculum Concept
National Economy/Defense Impact
Why Project Management?
System Acquisition Process
Role OSD I&L and DDR&E
Organization of Hqs Dept of the Army/Navy/Air Force
Project Management Philosophy of the Army/Navy/Air force
Effective Systems Management
Role of Defense Industry
Management of Change
Development Concept Papers
Introduction to Planning Programming Budgeting Systems
JCS Planning & Establishment of Requirements
Establishment of Requirements - Army/Navy/Air Force
Use of Time Sharing
Five Year Defense Program
Budget Process
Program Budget Control
Foreign Technological Threat
Resource Management & SAIMS
System Decision Making
Supporting Management Information Systems
Cost Estimating Techniques
Role of Systems Analysis in DOD
Introduction to Weapon Systems Management
Establishment of a Project Case Study-Army/Navy/Air Force
Establishment of a Joint Project
Establishment of a Project - Army/Navy/Air Force
NAV-TAC-COM Equipment System Exercise
Integrated Logistics Support
OSD View of Resource Management
Introduction to Configuration Management
Systems Analysis - A Method

APPENDIX I
to Enclosure (3)

The fourth week is used to treat activities which occur prior to Contract Definition of a System Project (Concept Formulation). Topics include the following:

Concept Formulation
Introduction to Systems Engineering
Learning Curves
Introduction Government Contracting
Integrated Logistics Support Planning - Army/ Navy
AFSC/AFLC Planning for Integrated Logistics Support During system Life Cycle - Air Force
Advanced Procurement Planning
Technical Development Plans
Concept Formulation Case Study
Total Package Procurement
Project Master Plan - Army/Navy/Air Force
Contract Definition

The fifth week is used primarily to discuss the events and problems which will face the System Project Manager during the Contract Definition. Emphasis on early planning for support of the system/ project is shown. Topics which will be covered in this period include the following:

Transition to Contract Definition
Procurement and Engineering Aspects of Contract Definition
Cost Effectiveness Study
Source Selection with an associated exercise
Multiple Incentives with an associated exercise
Profit Policy
Financial Management C-5A
Contract Definition Case History
Negotiation Process

The emphasis on early planning is continued through the next four weeks by treatment of all subsequent activities during the acquisition phase. Topics covered are as follows:

Transition to Acquisition
Management Techniques During Development
Planning and Control Management (PLACOMS) Exercise
Engineering Responsibilities During Acquisition
Production Planning
Value Engineering and Quality Assurance
Specifications and Related Documents
Government/Industry Problems
Configuration Management - Army/Navy/Air Force
Technical Publication - Army/Navy/Air Force
Facilities Planning
Industry's Role in Configuration Management
Management Techniques During Production
Reliability & Maintainability Theory, Policy & Exercise
Human Factors, Motivation and Confidence Limits

ILS Maintenance Engineering Concepts & Data Systems -Army/ Navy/Air Force
Maintenance Deficiency Reporting System Air Force
Procurement of Management & Technical Data
System Safety
Production Contracts
Total Ship Life Cycle Management
TFX Case Study
Human Engineering
Production Surveillance
Effective Communication
Augmented Contractor Support
Standard Integrated Support Management Systems
Provisioning - Army/Navy/Air Force
Training Requirements - Army/ Navy/ Air Force
Contract Administrative Services
Line of Balance
ASPR Committee
Management Surveys
Weapon Systems Logistics Support Exercise - Army/Navy/ Air Force
Transportation Requirements
International Logistics
Project Manager Discussion - Army/Navy/ Air Force
Mission of DSA in Support of Weapon Systems
Logistics Model (Life Cycle Costing)

The tenth and final week of the course is used to present a computerized management game embodying many of the principles discussed during the preceding weeks. Students are divided into teams which act as system/ project offices. The object of the game is to field a weapon system to meet a specific requirement, optimizing cost, schedule and performance. Sufficient background information is furnished to enable the teams to apply lessons learned during the course. The exercise is completed by team presentations outlining the team approach, problems encountered, lessons learned, and other points of interest.

Postgraduate Education for Project Managers

1. Graduate education significantly enhances the competence of those in the project management field, including those at associated field activities. The structure of the Navy's postgraduate education system has been and should continue to be designed to provide an educational foundation for this area of endeavor as well as many others of Navy interest. This education system is continually changing and evolving to meet Navy needs and stated requirements.

2. Graduate education programs in technical areas conducted at the Naval Postgraduate School and in Business Administration, Management and Industrial Engineering/Management conducted by several civilian universities are presently available to satisfy specific Navy requirements.

As a result of recommendations/suggestions made by various subspecialty advisors the Management curriculum (Curriculum number 817) at the Naval Postgraduate School has been reviewed. The Material Management electives (option 4) will be strengthened and oriented so as to provide more emphasis in weapon system acquisition.

3. A specific educational program in support of project management should consist of formal education in engineering, science, or mathematics followed by graduate education in the field of management, business administration or industrial engineering. A curricula of this type is being developed by the Superintendent, U.S. Naval Postgraduate School and an outline of the curricula is attached as Appendix I to this enclosure. It is considered very likely that this educational offering will attract many highly competent officers who may not be motivated for engineering or science programs. The proposed curricula would be the educational base for a new subspecialty category which is described in enclosure (5) but would also be available to Restricted Line and Staff Corps Officers.

Enclosure (4)

Outline of Proposed Curriculum in
Weapon System Acquisition Management

1. The proposed curriculum is currently being staffed at the U.S. Naval Postgraduate School. Preliminary liaison with the Superintendent indicates that the course will be six quarters (18 months) in length and lead to a Master of Science Degree in Management.

The course will be designed for those officers with an undergraduate degree in a technical discipline. Topics to be covered include:

Financial Management
Engineering Economics
Engineering Aministration
Operations Research
Systems Analysis
Systems Effectiveness
Contact Administration
Weapons System Acquisition
Cost Estimating
Contract Law
Management Information Systems
Quality Control Theory
Human Factors in System Design
Public Sector Finance
Decision Making Under Uncertainty
R&D Administration

APPENDIX I to Enclosure (4)

Project Management Subspecialty

A. Background

1. A large majority of the opinions, comments, suggestions, etc. that have been received indicate that experience in project management associated activities is a major ingredient for producing qualified candidates for the top project manager positions. This is true of both warfare specialists and restricted line specialists. Within the framework of approved career patterns the qualified officer can be developed if the appropriate billets are identified and if the right officers are assigned to these billets in sequence. The experience base can only be developed in this manner.

B. Methodology

1. The following factors were considered in developing this analysis:

a. Weapon System Acquisition Management is not discreetly and uniformly defined, as is an area of endeavor in engineering or science.

b. There exists a variety of activities and billets outside the System Command's Headquarters associated with WSAM.

c. Neither the billets associated with WSAM nor the personnel in training for qualification as project managers are presently uniquely indentified.

d. Weapon System Acquisition Management does and will continue to exist within the framework of the present day Navy. It will evolve as new activities replace old and as specific billets replace present ones.

2. The URL billets identified as relating to Weapon System Acquisition Management were allocated to the warfare specialty career development pattern tour positions so as to determine total requirements at each grade for each warfare specialty and the number of officers with the specified years commissioned service required to flow through the tour position annually. These annual flow rates (equivalent to officers per year group) are shown in Appendices I-III.

C. Conclusions

1. The results of this billet review show that approximately 10% of the URL shore requirements are associated with Weapon System Acquisition Management. This is true of the three major warfare specialties, surface, aviation and submarine and at each of the

grades considered. Although anamolies do exist in certain warfare specialties and at some grades, the Navy can develop through a coordinated series of assignments sufficient officers with the right amount of warfare expertise, education, and WSAM experience from whom the project managers can be selected. A tabulation of the list of billets is as follows:

	GRADE			
Designator	LCDR	CDR	CAPT	TOTAL
1100 (Surf)	135	118	108 =	361
1120 (Sub)	31	42	20 =	93
13XX (Avia)	104	166	78 =	348
TOTAL URL	270	326	206 =	802
1400 (EDO)	338	342	185 =	865
15XX (AEDO)	108	135	86 =	329
1700 (OEDO)	34	52	20 =	106
TOTAL RL	480	529	291	1300
3100 (SC)	385	396	177 =	958
TOTAL NAVY	1135	1251	674	3060

D. Recommendations

1. It is recommended that subspecialty in Project Management be established within the framework of the existing subspecialty concept. This is necessary to discreetly identify the billets and the individuals who pass through these billets. If this concept is approved, the Chief of Naval Personnel will provide to OPNAV OP-01 (SG) the list of billets identified as appropriate for coding in this new area. Concurrently, BuPers will revise the present identification procedures for officers who attain this subspecialty.

E. General

Planned carreer development patterns for URL WSAM subspecialists based on approved warfare specialty career development plans are shown in appendices I through III. Listed for each warfare specialty are the present grade levels, the years commissioned service (YCS) in which the tour is programmed, the total WSAM requirements for that tour, the annual requirements for that tour i. e., the number of officers in each YG with the corresponding YCS in order to meet the total requirements of the tour and lastly a brief description of the tour and types of duties associated therewith.

2. The graduate education in support of this subspecialty is described in enclosure (4).

CHARLES K. DUNCAN

Surface Warefare Career Development Plan
WSAM Subspecialty

GRADE	YCS	TOTAL WSAM REQ ANNUAL REQ	DESCRIPTION AND TYPES OF BILLETS
Ens/JG/LT	0-8 1/2	0	First and second sea tours with basic warfare development. Graduate education in support of senior billet requirements.
LCDR	81/2-11 1/2	135 billets 45 officers/yr	System Commands, Asst in functional areas, OPNAV/OSD development, costing, procurement, NPRO, WEPSTA, PMO FAC, OPTEVFOR. Grad education for those not previously attending.
LCDR/CDR	111/2-141/2	0	Third sea tour.
CDR	141/2-171/2	118 billets 39 officers/yr	System Commands, PM staff, NPRO, R&D, Test and Eval. DWSMC
CDR	171/2-201/2	0	Fourth Sea tour
*CAPT	201/2-231/2	108 billets 36 officers/yr	NMC, System Commands, OPNAV, OSD. Division directors.
**CAPT	231/2-25	0	Major Command.

*Note: Captains with 25-30 YCS can fill some of the 108 Captain billets allocated to this time frame. Numbers are a function of the actual inventory remaining in Navy and qualified in this area of endeavor.

**Note: Designated Major Command Equivalent billets will be filled in this time frame.

Aviation Warfare Career Development Plan
WSAM Subspecialty

GRADE	YCS	TOTAL WSAM REG ANNUAL REG	Description and Types of Billets
ENS/JG/LT	0-9 1/2	0	First and second sea tours with basic warfare development. Graduate education in support of senior billet requirements.
LCDR	9 1/2-11 1/2	166 billets 83 officers/yr	Air System Command, NPRO NATC, Asst to branch/div heads. OPNAV, Graduate education for those not previously attending.
LCDR/CDR	11 1/2-16 1/2	0	Third sea tour
*CDR	16 1/2-18 1/2	166 billets 83 officers/yr	NMC, Air Sys Com, OPNAV, NavAirLant/Pac, NPRO, Asst PM, Branch Heads, DWSMC
CDR	18 1/2-20 1/2	0	Fourth sea tour.
*CAPT	20 1/2-22 1/2	78 billets 39 officers/yr	OPNAV, Joint Staff, NMC Air Sys Com.
*CAPT	22 1/2-25 1/2	0	Deep draft, Major Command

*Note 1. Commanders who do not serve an entire third sea tour can fill some of the 166 Commander billets allocated to this time frame. Number is a function of operating force requirements.

*Note 2. Captains with 25-30 YCS can fill some of the 78 Captain billets allocated to this time frame. Number is a function of the actual inventory remaining in the Navy and qualified in this area of endeavor.

*Note 3. Designated Major Command Equivalent billets will be filled in this time frame.

Submarine Warfare Career Development Plan
WSAM Subspecialty

GRADE	YCS	TOTAL WSAM REQ ANNUAL REQ	DESCRIPTION AND TYPE OF BILLETS
ENS/JG/LT	0-10	0	First and second sea tours with basic warfare development. Graduate education in support of senior billet requirements.
LCDR	10-12	31 billets 15 officers/yr	DSSP, U/W Wep Activity Weps test and eval. Asst in functional areas. Graduate education for those not previously attending.
LCDR	12-14	0	Third sea tour.
*CDR	14-16	42 billets 21 officers/yr	SSPO. ORDSYSCOM, Liaison, Planning sections, DWSMC.
CDR	16-19 1/2	0	Fourth sea tour.
*CAPT	19 1/2-21 1/2	20 billets 10 officers/yr	SSPO, DSSP, NMC, Division directors.
*CAPT	21 1/2-24 1/2	0	Deep draft, Major command.

*Note 1: Commanders who do not serve in a fourth sea tour can fill some of the 42 Commander billets allocated to this time frame. This number will be small until the nuclear qualified inventory at this time frame is substantially increased. Diesel trained officers will fill these billets until then.

*Note 2: Captains with 25-30 YCS can fill some of the 20 Captain billets allocated to this time frame. Number is a function of the actual inventory remaining in the Navy and qualified in this area of endeavor.

*Note 3: Designated Major Command Equivalent billets will be filled in the time frame.

APPENDIX III to Enclosure (5)

MAT 02A:TJN

FIRST ENDORSEMENT on BUPERS ltr Pers Ag-snw of 28 April 1970 to CNO via CNM

From: Chief of Naval Material
to: Chief of Naval Operations

Subj: Career Development and Selection of Weapons System Acquisition Managers

1. Forwarded recommending approval subject to the following comments:

a. The Chief of Naval Material is charged with the responsibility of designating work efforts to be projectized. It is therefore recommended that those Project Manager positions, reporting to either a Systems Commander or to the Chief of Naval Material, that are nominated by the Chief of Naval Material, subject to review by the Chief of Naval Operations, be considered for designation as "equivalent to major command." The largest number of positions to be considered for designation would be at the Systems Command level, since it is the policy of the Chief of Naval Material that projects be designated at that level unless overriding considerations prevail.

b. The concept of selecting project managers through board action is concurred in. It is recommended that the same selection boards responsible for major ship and shore command selections be utilized for the selection of project managers and that the names of officers so selected appear on the same listing. It is further recommended that the boards, while sitting for the purpose of selecting project managers, include a Chief of Naval Material representative of flag rank.

c. While the primary emphasis of the basic correspondence addresses project managers and the unrestricted line officer community, of equal importance are officers of the restricted line and staff corps in positions as acquisition and procurement managers in the weapons systems acquisition process. This combined community, consisting of approximately two-thirds of the total officer population involved in weapons systems acquisition (1300 restricted line and 958 staff corps officers) have been omitted from any career planning pattern. If we are to attract and retain outstanding personnel to these assignments then these personnel must receive recognition through total career planning.

2. The complexity and expense of the weapons systems of today necessitates the development of a highly experienced cadre of officers who are and will be involved in their acquisition. The operator/user experience that the unrestricted line officer possesses has been and will continue to be invaluable in assuring that weapons introduced into the fleet are capable of meeting the threat for which they were conceived. The recognition of this need by the Chief of Naval Personnel Study and the plans to implement the recommendations

thereof will do much to enable the Chief of Naval Material to responsively and successfully carry our assigned responsibilities, both to the Navy and to the Chief of Naval Operations. In the final analysis, Navy success in improving the acquisition process rests in the clear demonstration that the best available talent is assigned to material acquisition requirements in the same manner as provided for operational requirements.

I. J. GALATIN

Copy to:
BUPERS
COMNAVAIRSYSCOM
COMNAVELEXSYSCOM
COMNAVORDSYSCOM
COMNAVSHIPSYSCOM
SUPT PG School

APPENDIX D: GUIDANCE FOR WSAM AVIATION SUBSPECIALTY BOARD

Qualifications for Project Manager

1. Significant Operational Experience. In all cases this will include at least two operationsl tours, preferably through department head level. For the URL officer this will usually include command or executive officer duty at the LCDR/CDR level. The emphasis under OTMS will be that of "multiple paths" and careers directed accordingly. The Restricted Line officer should have served in challenging assignments under similar pressure situations and which demanded superior leadership ability.

2. Technically Qualified (In order of desirability)

a. Masters Level Education in:

Engineering
Physical Sciences
Math, Quantitative Analysis or Computer Sciences

b. Test Pilot School or Nuclear Power School

c. Bachelor's Degree + experience in same disciplines as 2a.

3. Management Qualification (In order of desirability)

a. Masters Level Education in:

Business Administration
Financial Management
Industrial Management
Material Management
Systems Acquisition Management

b. Advanced Functional Training:

Harvard Short Courses (AMP & PMD)
Defense Systems Management School (Fort Belvoir)
ICAF

4. Experience

Ideally 7 - 8 years in following types of duty:

a. Washington Area (at least one tour is essential)

(1) Proj. Mgr. Staff (or Projects)
(2) Asst. Proj. Mgr. for Logistics
(3) "Type Desk" at SYSCOMHQ

Note: Highly desireable that (1), (2) and (3) be in same SYSCOM as project for which individual is selected.

(4) Platform (Hardware) Sponsors Organization (e.g. OP-506)
(5) DDR&E (SECDEF) or RDT&E (OP-98)
(6) Financial Mgmt (SAM Associated) e.g. PAMN, SCN.
(7) Defense Nuclear Agency (selected billets).

b. Field Activities.

(1) Naval Plant Rep Offices
(2) SUPSHIPS
(3) OPTEVFOR
(4) Test Centers (e.g., NATC PAX, Naval Missile Center)
(5) LABS - (e.g., NADC Johnsville, NOL, NWC, Lawrence - Livermoor)
(6) NARFS or NAVSHIPYARDS (Senior Tours)

c. Sea Duty

(1) New Construction (Selected cases)
(2) Fleet/Force Material Support (normally RL only)

Remarks: Weight given technical vice managerial qualification may vary. Technical competence appears to dominate requirement for PM up to the point of production and fleet introduction. Thereafter, management skills are most taxed.

1. When the following billets are not filled by a flag officer, the Deputy Chiefs of the Naval Material Command and the Deputies in all the Systems Command are equivalent to a major command at sea or ashore.

2. The Deputy to CNM Project Managers, who are flag officers (PM-1, PM-4, PM-7, PM-13), is equivalent to a major command at sea or ashore.

3. The Deputies to the Deputy Chief of Naval Material (Development), the Deputy Chief of Naval Material (Logistic Support) and the Deputy Director of Navy Laboratories/Laboratory Programs is equivalent to major command at sea or ashore.

GENERAL CONSIDERATIONS
REGARDING WSAM QUALIFICATIONS

The qualifications listed in the 16 October paper ("Qualifications for project Manager") are generally good and could well form the initial basis for a BuPers prescreen to p roduce a list of candidates. These qualifications are idealized, of course, and many good candidates will have only a partial background in the WSAM area.

Two critical factors missing are motivation and past performance, especially in WSAM - related billets. Motivation is difficult to assess, even when the individual has applied for WSAM coding, because applications may be anticipated from some officers whose primary motivation is to improve their own chances of promotion.

Past performance can be assessed by a selection board, and this board has put heavy emphasis on performance as well as background in evaluating the records reviewed. Particularly in the case where a candidate has only a partial background of education or related experience, the officer's performance record has been used to judge his suitability for WSAM selection.

This board has concluded unanimously that WSAM designation should not be given to an officer until he has served long enough to understand and prove himself in the fleet operating environment in which our weapon systems must function. Suggested minimum service criteria for future BuPers screening are seven years commissioned service, of which at least three years must be in a fleet billet.

This board has also concluded that an officer within three years of probable statutory retirement is not a suitable candidate for WSAM coding. Accordingly, this board did not select officers from year groups 44 and senior, or officers in the grades of CDR and LCDR whose expected service remaining would not allow time for development in a WSAM career pattern.

ENCLOSURE (1)

IDEAL SELECTION CRITERIA FOR DESIGNATION AS A POTENTIAL WEAPONS SYSTEM ACQUISITION MANAGER

LCDR (at least 7 years total service, of which at least 3 years have been in an operational billet)

- Engineering PG School graduate
- TPS graduate plus tour at NATC/NMC or
- BS degree in physical sciences or engineering plus WSAM tour in SysCom activity

CDR
- Junior CDR'S - same as for LCDR
- Senior CDR'S - any two of the LCDR criteria

CAPT
- Any two of the LCDR criteria plus at least one WSAM related tour at SysCom Headquarters

ENCLOSURE (1)

CONSIDERATIONS REGARDING URL CANDIDATES

Many officers selected by this board,especially in the grades of CDR and LCDR, have been chosen because of appropriate education or experience augmented by very fine performance records. It is to be expected that many of these officers will decline WSAM coding, and others will be in great demand for other billets, simply because they are top performers. This situation requires the initial selection to be relatively large in relation to the number of billets to be filled, and works against the philosophy of a small selection of only the very best qualified.

Much will depend in the future on the extent to which a post-graduate degree becomes a widely understood initial step toward a technical or managerial career pattern. This board has reviewed many fine records in which officers have spent three years in engineering postgraduate study, and have subsequently never been assigned to a billet requiring that education. The resources required to support this unutilized education may well be less critical than the three prime years a promising young officer spends away from an operational billet.

ENCLOSURE (2)

CONSIDERATIONS REGARDING

RESTRICTED LINE CANDIDATES

The Aeronautical Engineering Community has evolved a career pattern and utilization criteria with the same basic objective of improved weapons systems acquisition. This philosophy is based on close coupling with fleet operations and a team approach with the Unrestricted Line aviator. Care must be exercised to preclude the diminution of the beneficial aspects of this approach. While the benefit of better utilization of URL assets is recognized, the WSAM concept will force a re-evaluation of 15xx community policies. To assure that the approach is optimized to the benefit of the Navy, long range objectives and approaches should be evaluated and clearly delineated. Community changes can thus be evaluated in terms of broader objectives.

ENCLOSURE (3)

CHAPTER V

CAREER PLANNING

It has been said that there are two ways of making Admiral–the right way and the wrong way. The "right" method, naturally, is the one described in this chapter. The "wrong" method is counter to the prescribed patterns, but is related to something said in various ways throughout this book–if your performance is consistently strong enough, it can overcome many obstacles.

The precepts outlined here were developed principally in recognition of the longer tours of duty that EDs will encounter in the future. Longer tours in themselves tend to increase specialization. The functional areas of specialization defined herein were chosen with a view toward those billets that form the apex of a career as an Engineering Duty officer. These billets are defined later as Command/Command Equivalent. It is essential that each ED follow his own career very carefully, identifying his area of specialization and ensuring that it matches his aspirations for the future.

The basis for the career plan described here was developed by an ED Career Planning Board, established by BUPERS in February 1971, and consisting of NAVSHIPS, NAVELEX, and BUPERS members. ED careers were studied from three points of view: First, overall career patterns and major subareas of specialization were considered. Second, the ED billets were examined to determine levels of responsibility, and the billets were then grouped in tiers running from the top to the bottom of the rank structure. Finally, the ideal community structure was determined based upon established (and projected) inputs, promotion rates, and losses. The results of this study were approved by a board of ED flag officers and are presented in this chapter for guidance of all ED officers.

FUNCTIONAL AREAS

Officers within the ED community may specialize in such diverse areas as electronics, nuclear submarines, or surface ship technology; however, their career patterns tend to fall into three broad functional categories. These are:

- *Fleet Maintenance/Support.* This area includes all billets involved in the repair, modification, maintenance, and logistic support of the active fleet and associated components of the Shore Establishment.

- *Weapons System/Component Acquisition or Procurement.* This area includes all billets associated with ship construction or conversion and the procurement of subsystems and components furnished by the Government in these new

construction programs. The construction of shore communications and electronic surveillance stations is included in this category.

- *Research and Engineering.* This area includes all billets associated with the engineering development of new theories and concepts, as well as the procurement of new systems through the developmental stage.

It is expected that EDs will generally develop in one, or at the most two, of these nctional areas. With longer tours it is normally not feasible to have a significant number assignments in all three functional areas.

EVELS OF RESPONSIBILITY

The ED Career Planning Board determined that all ED billets could be grouped into x levels of responsibility as shown in Figure V-1. This figure depicts the six levels in cending order of responsibility and opposite the approximate years of commissioned rvice and the current normal promotion pattern. Note that the Basic, Middle Management, and Upper Management tiers each span two pay grades. Also, the Command/ ommand Equivalent billets overlap, in time, both the Key Management and Senior lanagement billets. Table V-1 describes these levels of responsibility and lists a few pecific billets typical of the level.

Perhaps the area termed "Command/Command Equivalent" deserves further omment. All captains will obviously not be assigned to one of these billets, but the pportunity for these assignments can be readily estimated. There are about 30 billets in his category. If we make the currently valid assumptions that the average tour length in a ommand billet is 36 months, and that officers will be ordered during the five-year span rom their 22d to 26th year, then the number of command opportunities s $\frac{5 \times 12 \times 30}{36} = 50$.

Based on the ideal year group size, an estimated 134 officers are eligible for these illets. This means that the opportunity for being selected for command is $\frac{50}{134} = 37\%$. ut another way, it can be expected from this that, on the average, there will be $\frac{134}{5} \times 0.37 = 10$ officers selected from each year group. (Note: A simplified mathematical pproach giving approximate results has been utilized here since the assumptions themelves are inexact.)

AREER PATTERNS

Figures V-2, V-3, and V-4 represent possible career patterns for the three functional reas, Fleet Maintenance, Systems Acquisition, and Research and Engineering. The three igures show the usual case of an officer becoming an ED through engineering post-

LEVELS OF RESPONSIBILITY		YEARS SINCE COMMISSION	GRADE
SENIOR MANAGEMENT		31	CAPT
		30	
	COMMAND	29	
		28	
		27	
KEY MANAGEMENT		26	
		25	
		24	
		23	
		22	
		21	
UPPER MANAGEMENT / TECHNOLOGY	SEA DUTY	20	CDR
		19	
		18	
		17	
MIDDLE MANAGEMENT / TECHNOLOGY		16	
		15	LCDR
		14	
		13	
		12	
		11	
BASIC		10	
		9	
		8	LT
		7	
		6	
		5	
		4	
UNRESTRICTED LINE URL		3	LTJG
		2	
		1	ENS

Figure V-1. Levels of Responsibility

Table V-1
Descriptions of Levels of Responsibilities

SIC

These billets are the training ground for the specialist officer. It is through the education and experience gained in ts group that an officer makes the transition from a warfare to a technical specialist. Officers will normally face ection for lieutenant commander while serving in these billets. Included in this tour group are technical postgraduate ool billets and junior billets in industrial activities. Typical billets are:

- Student, Naval Postgraduate School, Monterey
- Student, Course 510, MIT
- Ship Superintendent, Naval Shipyard
- Asst. P&E Superintendent, SRF Subic Bay
- Type Desk Officer, Naval Shipyard

DDLE MANAGEMENT/TECHNICAL

These billets require officers with sound technical experience and sufficient maturity to accept positions requiring ic management skills. It is in these billets that the officer commences the conversion from a technical specialist to a hnical manager and prepares for positions of increasing management ability. Officers will normally face selection for mmander while serving in these billets and can expect that selection boards will place strong emphasis on performnce in these billets as a factor in selection for promotion. Included are junior billets in headquarters, project nagers, and first-level line managers in field activities and department heads afloat. Typical billets are:

- DE/DD/DDG/DLG Engineering Officer (1200 # steam plant)
- AR/AD Repair Officer
- Vietnam Advisor
- Asst. Maint. Off., Type Commander's Staff
- Asst. P&E Superintendent, Naval Shipyard
- Data Processing Off., Naval Shipyard
- Project Officer, SUPSHIP
- Asst. Proj. Off., NAVELEX
- OIC, Naval Electronics Activity
- Proj. Coord., NAVSEC
- Asst. SLM, NAVSHIPS

PER MANAGEMENT/TECHNICAL

These billets require seasoned FD officers with the requisite technical and managerial experience to direct smaller jects and to serve as principal assistants to key managers. These billets include positions for both captains and mmanders. Officers will normally face selection for captain while serving in these billets and can expect that selection ards will place strong emphasis on performance in these billets as a factor in selection for promotion. Most fleet staff ets for commander are in this grouping. These billets provide a final experience base before an officer is assigned to a / management billet. Typical billets are:

- CVA Engineering Officer
- AS Repair Officer
- Asst. Force Material Off., TYCOM Staff
- Repair Superintendent, Naval Shipyard

- QA Officer, SUPSHIP
- Nuclear Power Superintendent, Naval Shipyard
- PERA Coord., Naval Shipyard
- Program Officer, NELC; NSRDL Annapolis; etc.
- Ships APM and ALM
- OIC, Experimental Diving Unit
- SHIPS 035, 09MB, 032, 071
- ELEX 035; OMEGA Project Manager; Asst. Project Manager, SPECOM
- CO, Naval Security Engineering Facility.

KEY MANAGEMENT

These billets are found at the top managerial levels of major activities and staffs. They require officers with prior managerial and technical experience in the functional area in which they fall. Superior performance in at least one of these billets is normally a prerequisite to assignment to a command or command equivalent billet. These billets include PMS/PME (not designated as major command equivalent), shop logistics managers, NAVSEC division directors, fleet/force ship material officers, NAVELEX division directors, shipyard department heads, deputy SUPSHIPs (where SUPSHIP is a flag officer) and other important headquarters and field billets. Typical billets are:

- PMS 300, 302, 391, 395, 399
- PME 116
- NAVSEC 6100B, 6103, 6140, 6170
- NAVELEX 03
- Material Officer, CINCLANTFLT
- NAVMAT 032, 041
- NAVSHIPS 032, 041, 09M
- Production Officer, Naval Shipyard
- Planning Officer, Naval Shipyard
- Director of Industrial Engineering, ASN (I&L)

COMMAND/COMMAND EQUIVALENT

These are positions of commensurate importance which require officers of broad experience and exceptional executive ability. Assignment to these billets significantly enhances the officer's chances for selection to flag rank. The billet list includes all flag billets when filled by a captain, shipyard command, SRF command, laboratory command, major shore electronics commands, major SUPSHIPs, CNM designated major projects, and certain other prestigious billets within the headquarters and field activities.

SENIOR

These are top management and executive positions of considerable importance which require experienced officers with proven managerial ability. Senior officers who have served in command will be assigned wherever available. In some instances, officers may serve in these billets prior to command assignments. Billets include deputies within SYSCOM directorates, NAVSEC field commands, certain SUPSHIP and shipbuilding liason officers, and the military sealift command technical director.

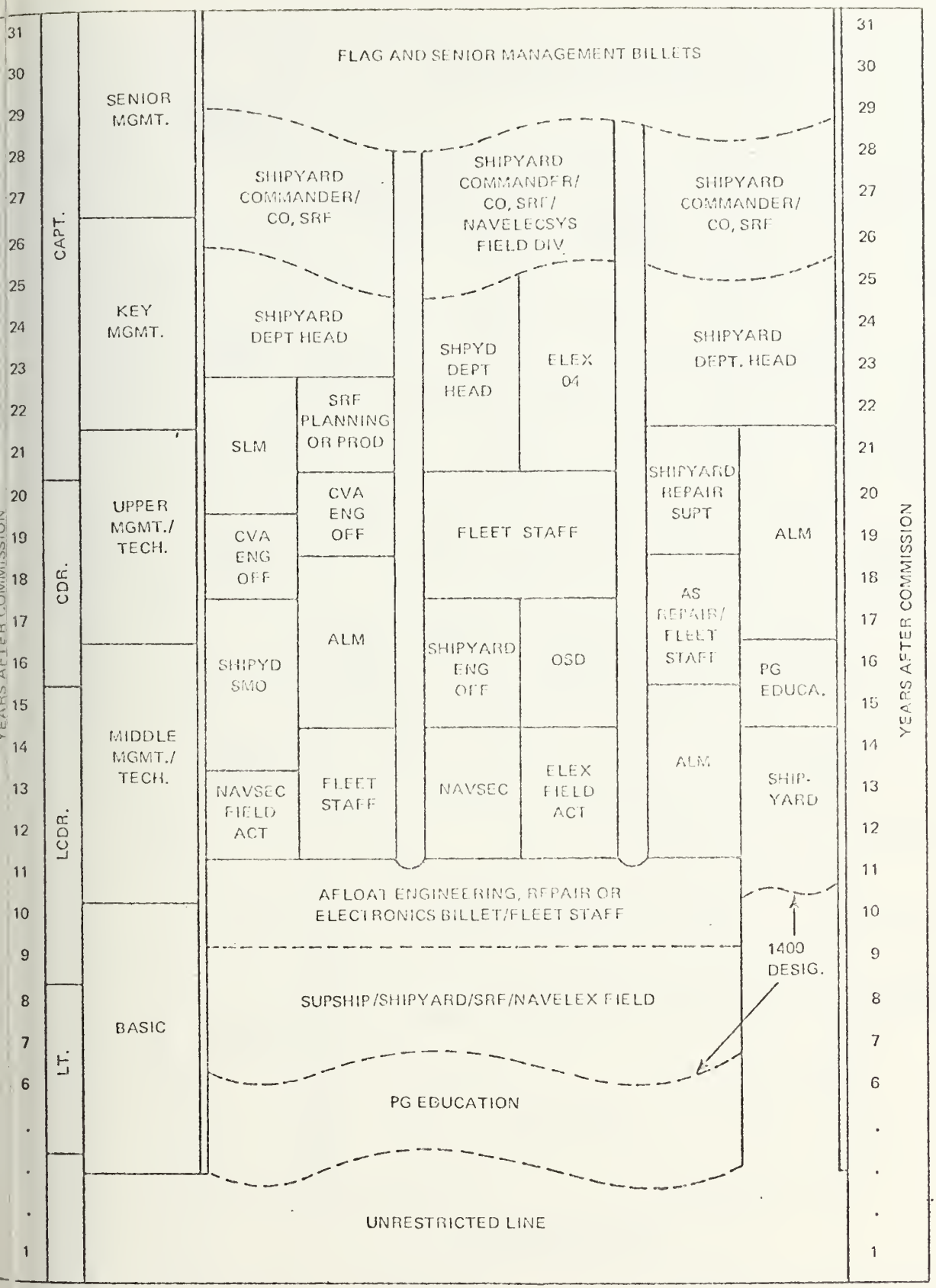


Figure V-2. Possible Career Patterns–Fleet Maintenance and Support Area

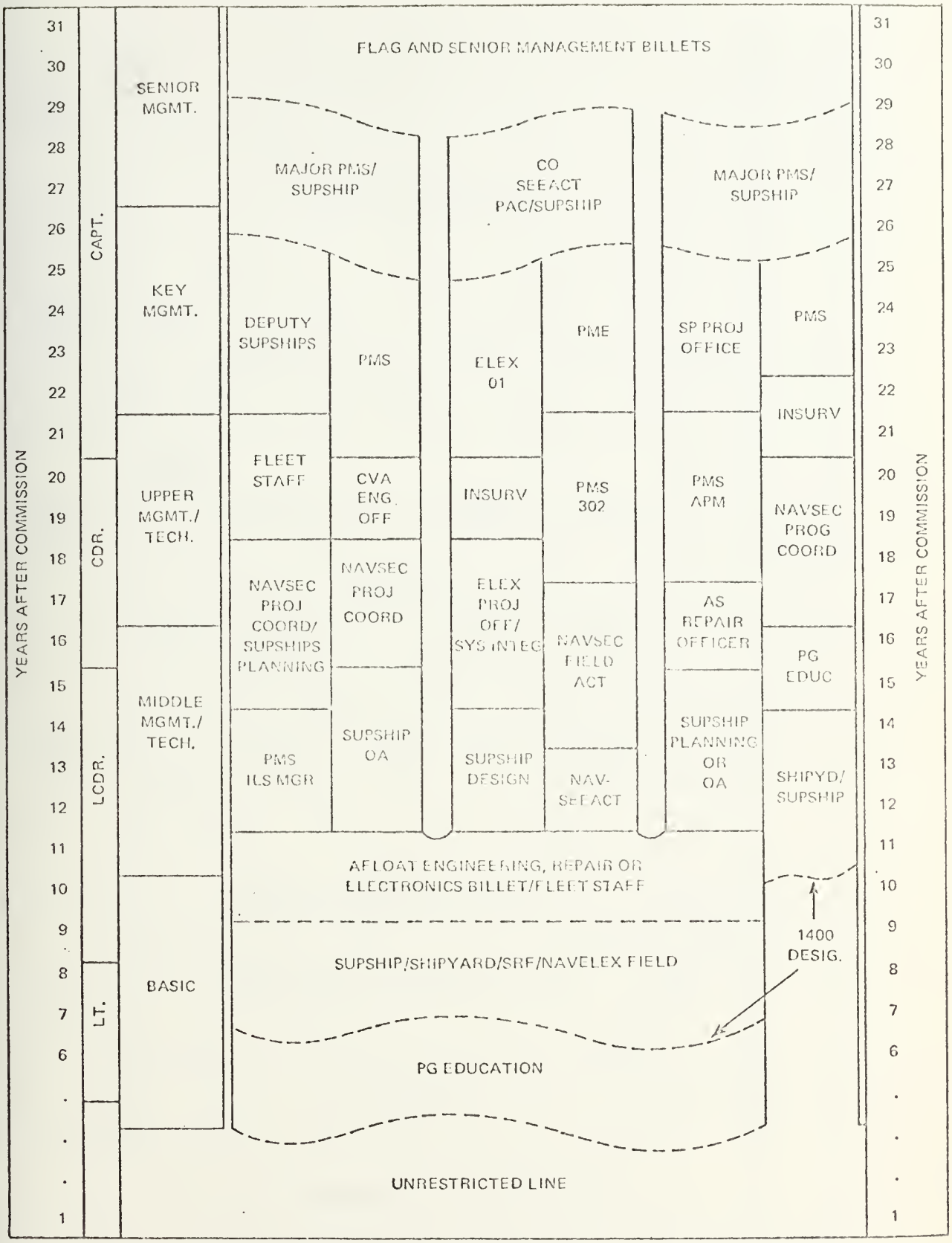


Figure V-3. Possible Career Patterns—Systems Acquisition

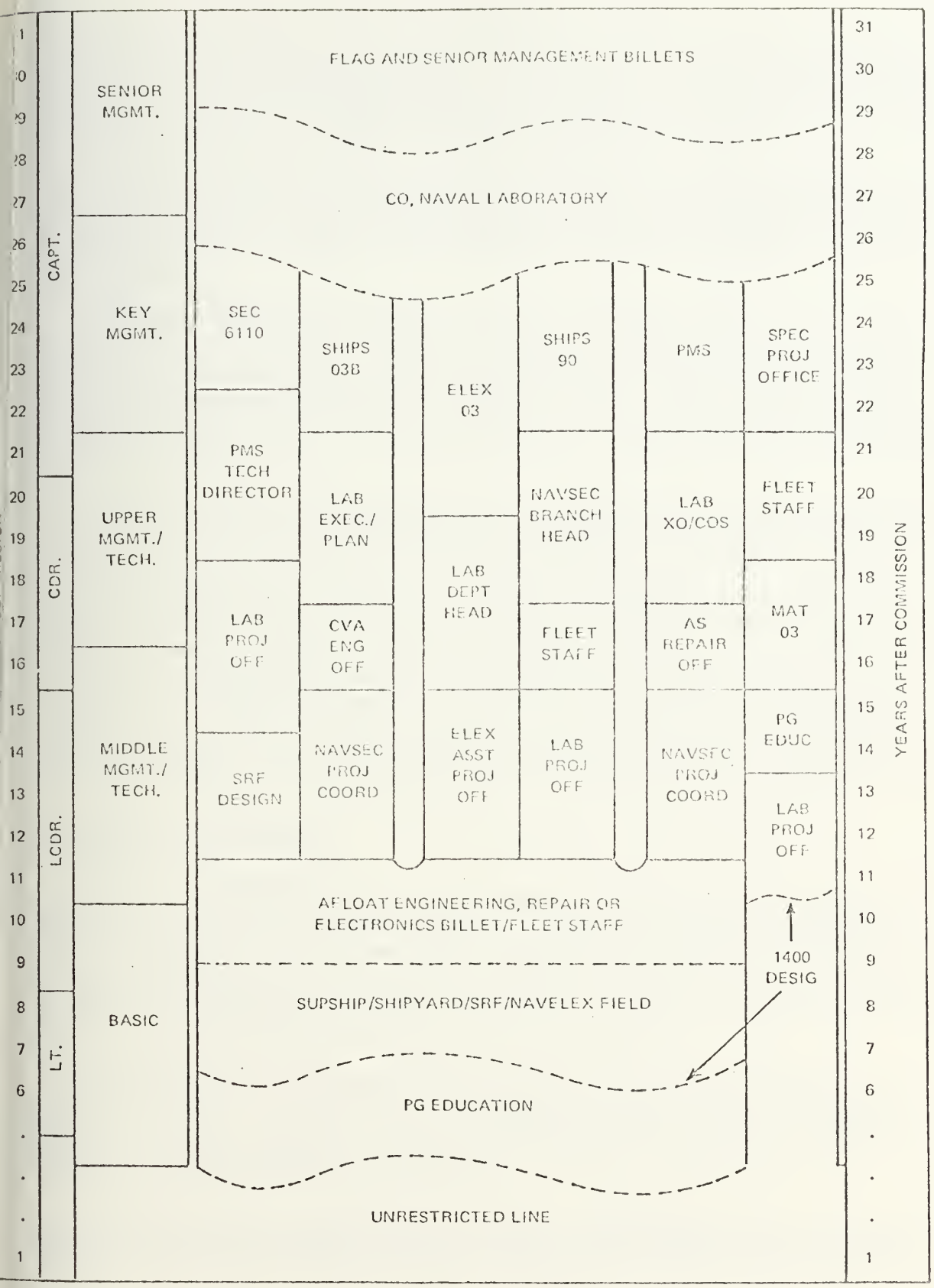


Figure V-4. Possible Career Patterns–Research and Engineering

graduate (PG) training, after an initial tour of three or four years in the Unrestricted Line. As an alternative entry point, designation as a 1400 officer may occur after ten or more years in the URL. In this case, which is fairly typical of the submarine officer, PG education may be delayed until after an initial tour in a 1400 activity.

During the Basic period, PG education, industrial tours, and sea duty constitute the primary pattern for all EDs. In this period, one of the three functional areas should emerge as a dominant interest—i.e., Fleet Maintenance, Systems Acquisition, or Research and Engineering.

The Middle Management/Technical phase follows the Basic phase where the officer has acquired the initial technical experience and skills. In this second phase the ED can be considered moving into positions of management—where he is directing larger organizations and is responsible for managing the utilization of increased quantities of resources. He should now be focusing his career pattern along the axis of one of the functional areas previously described.

As the ED moves up into higher levels of responsibility, the management aspects of his assignments become increasingly important relative to the technical facets. The requisite managerial competence is gained through experience and education programs. Since there are a variety of educational development programs that can occur at every stage of an officer's career, and they are usually of relatively short duration, no educational programs are included in Figures V-2 through V-4. This does not lessen their importance in career planning, however (see Chapter VI). *One final and important point should be made regarding Figures V-2 through V-4. No special significance should be placed on the choice of billets shown. The figures are labeled "Possible Career Patterns"—and that is how they should be considered. These are not blueprints for success and should not be interpreted as such!*

PLANNING YOUR CAREER

Each ED should periodically review his career up to the present and give careful attention to where he wants to go (careerwise, not geographic location) in the future. Goals and major interests may either solidify or become altered as one's career advances, and it is desirable that the ED recognize the situation himself and relay this information to those who are also planning his career—PERS B1401. *Again it is important to ensure that your career plan matches your aspirations, and vice versa!*

To facilitate both the thought process and the relaying of the resultant information, EDs are encouraged to fill out a career planning form similar to those of Figures V-2 through V-4. A sample filled-in form is provided in Figure V-5 and a number of blank forms are included in Appendix C for your use.

In using this form, note that all billets up to and including the present billet (indicate this by arrow) should be specific. For future planning, billets should be stated in

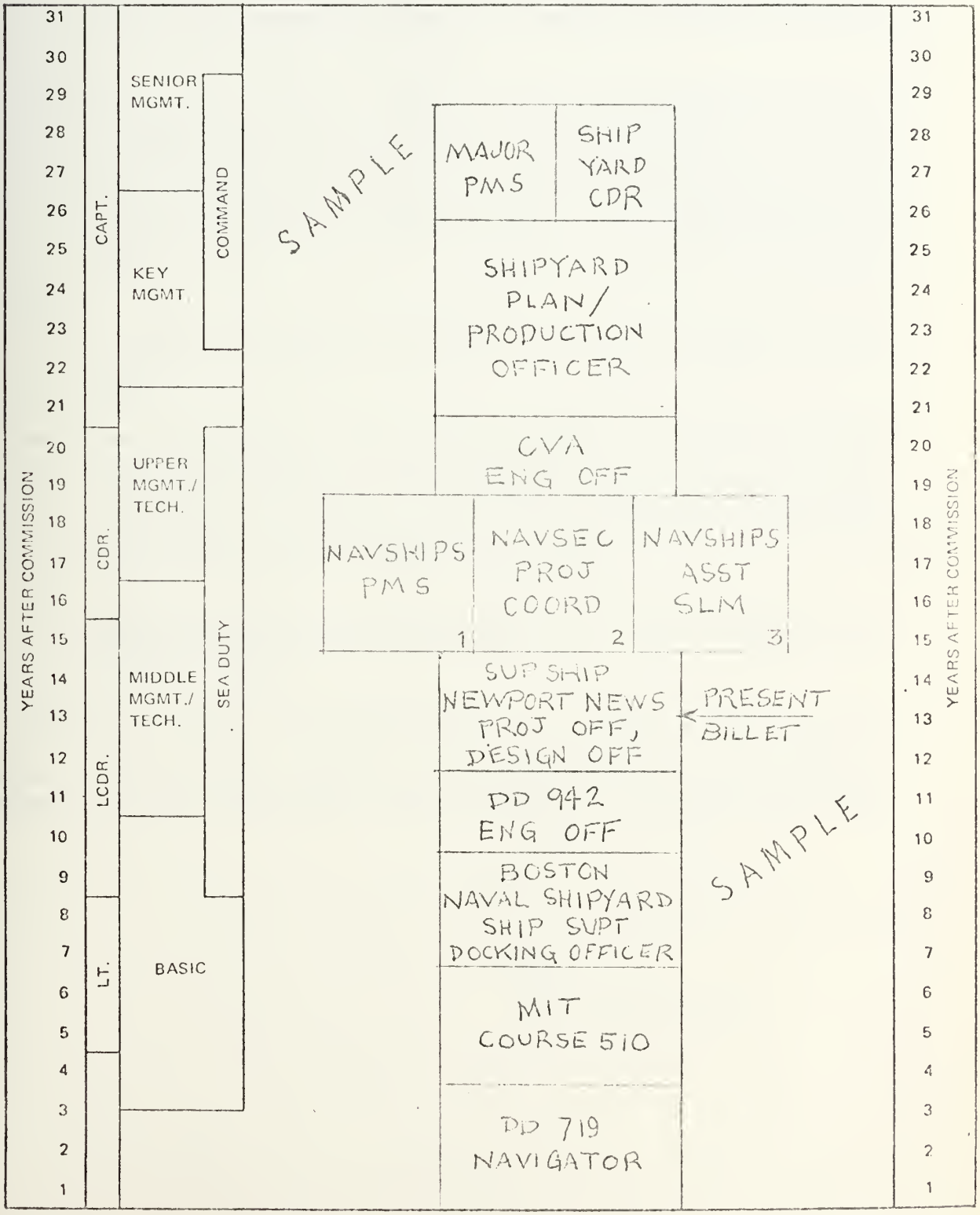
TABLE V

ED CAREER PLAN

Name E. D. HOOK Date 2/2/73

Primary Functional Area SYSTEMS ACQUISITION

Secondary Functional Area (if desired) FLEET MAINTENANCE



more general terms, usually by *type* of duty desired. Where a choice of billets can be indicated, these should be shown in parallel; a priority (i.e., 1, 2, 3, etc.) may be indicated on them if desired. Some notes for general guidance in planning your career are:

- Officers selected for a 1400 designator relatively early in their careers (prior to about the eighth year) should plan to have their first tour of duty as an ED in an industrial activity (naval shipyard or ship repair facility) followed by a tour of duty at sea in an engineering billet. Officers transferring from the Line to the ED group after extensive experience at sea usually have a tour at an industrial activity prior to commencing PG work.

- Because of the number of billets for EDs as Engineering Officers at sea, particularly on ships with 1200 pound steam plants, virtually all officers who are eligible can expect a tour of duty at sea as a lieutenant commander. Those with exceptionally good records in these assignments may be selected for the Engineer Officer billet in a CVA/LHA. These are career-enhancing billets and should be planned into your career regardless of functional area of specialization.

- It is highly desirable that EDs have at least one tour, or a significant start thereon, in the Washington area prior to entering the eligibility zone for captain.

- Typical career patterns should provide the officer with sufficient experience and training to qualify for command billets in any one, or perhaps two, of the major functional areas. Because of longer tours and other billet requirements, it is doubtful that an officer can qualify in all three areas. EDs should plan their functional area specialization early in their careers.

- Additional postgraduate education, of less than one year's duration, need not be shown on the career plan. Application for such courses should be made as indicated in Chapter VI.

Each ED should ensure that PERS B1401 has a copy of his career plan that accurately reflects his current long-range plans. Any major change in intent should be indicated on a revised career plan and a copy should be submitted. As a minimum, updated career plans should be sent to PERS B1401 at every permanent change of duty.

DEPARTMENT OF THE NAVY
HEADQUARTERS NAVAL MATERIAL COMMAND
WASHINGTON, D. C. 20360

IN REPLY REFER TO

22 NOV 1972

MEMORANDUM

Subject: Career Development of Navy Project Managers

Encl: (1) Questionnaire

Enclosure (1) is a questionnaire developed by Lieutenant Commanders Benjamin E. Allen and Thomas J. Loftus concerning career development patterns for project managers. Lieutenant Commanders Allen and Loftus are students in the Systems Acquisition Management Curriculum at the U. S. Naval Postgraduate School, Monterey, California. The questionnaire forms the basis for a study on the part of these two officers to determine a career program which can be used to help develop officers in the weapons acquisition field for their role as project managers.

Having been closely involved in and associated with our weapon system acquisition programs for some years, I recognize the need for a viable career program that will offer project managers the opportunity to develop the experience needed to assume the project manager's role. The value of well planned studies, such as the one being done by Lieutenant Commanders Allen and Loftus, can contribute a great deal toward strengthening our weapons acquisition process. Your assistance, by completing the enclosed questionnaire, is no less important.

These officers have requested, where possible, that the questionnaire be completed and returned to them by 31 December. I wholeheartedly endorse this type of effort and solicit your support.

R. G. Freeman, III
Deputy Chief of Naval Material
(Procurement and Production)

CAREER DEVELOPMENT OF THE NAVY PROJECT MANAGER

MASTER'S THESIS QUESTIONNAIRE

OBJECTIVES

This questionnaire is designed to investigate three questions:

(1) How acceptable to those in systems acquisition are the guidelines presented to the first Weapons Systems Acquisition Management (WSAM) subspecialty selection board in October 1972?

(2) Is there a consensus as to the types of educational background, functional training, and on-the-job experience which should be used to prepare a naval officer to become a project manager?

(3) Has there been a change of opinion in this matter since a questionnaire along these lines was administered in 1969?

INSTRUCTION

This questionnaire consists of three sections:

(1) ranking questions

(2) agree-disagree questions

(3) open-ended questions

Specific instructions will be given before each section. The following terms are used throughout the questionnaire and should be assumed to have the meaning given here:

(1) WSAM - Weapons Systems Acquisition Management

(2) Technical - pertaining to engineering, physical science, or mathematics

(3) Non-technical - including management, business administration, financial management, and (unless specifically mentioned) systems acquisition management

(4) Functional training - specialized training of short duration (normally one to three weeks) in such areas as cost analysis, integrated logistical support, etc.

Questionnaire no._____

Background Questions

Instructions: Circle the number corresponding to the most correct answer to each question.

1) What is your present assignment area?

   1. Personnel planning and career development (E.g. BUPERS, OPNAV-01, MAT-01, SYSCOM-01, etc.)

   2. Functional (hardware) Branch (E.g. SYSCOM, NAVMAT, etc.)

   3. Project Manager or his staff

   4. Field Activity (E.g. NAVPRO, SUPSHIPS, OPTEVFOR, etc.)

   5. Operational Requirements Branch (E.g. OP - 02, 03,05,09x etc.)

2) Are you

   1. Unrestricted Line (URL)

   2. Restricted Line (RL)

   3. Staff (E.g. Supply, Legal, etc.)

   4. Civilian

3) What is your grade level?

   1. 04 military or below

   2. 05 military

   3. 06 military

   4. Civilian

   5. Flag

4) What is your general area of knowledge?

   1. Surface Warfare

   2. Subsurface Warfare

   3. Aviation

   4. Electronics

   5. Ordnance

5) What is your area of special knowledge?

1. Technical (E.g. engineering, science, math, etc.)
2. Contracts (E.g. procurement, administration, legal, etc.)
3. Funding (E.g. PPBS, Program Coordination, Financial, etc.)
4. Test and Evaluation
5. Program Management (mixture of the above)
6. None of the above (Specify_____)

Circle the number corresponding to the most correct answer to each question.

6) What is your highest level of formal education?

1. B.S. degree, technical (E.g. engineering, science, math, etc.)
2. B.S. degree, non-technical (E.g. business admin., management, financial, etc.)
3. graduate degree, technical (as in (1.) above)
4. graduate degree, non-technical (as in (2.) above)
5. dual masters (engineering, management)
6. None of the above (Specify_____)

7) How many years cummulative experience do you have in any of the following areas: operational requirements, technical requirements design and engineering, test and evaluation, logistics, contract management, etc. ?

1. 0 - 2 years
2. Over 2 years - 4 years
3. Over 4 years - 6 years
4. Over 6 years - 8 years
5. Over 8 years

8) Was your experience gained in

1. Washington area
2. Field
3. Both Washington and Field

9) How long have you been in your present assignment?

1. Less than 6 months
2. 6 months to one year
3. Over one year to two years
4. Over two years to three years
5. Over three years

Section I. Ranking Questions

Instructions: In this section (questions 10-17) rank each set of alternatives (1 through 5) as a group by distributing the rankings:

(1) first choice
(2) second choice
(3) third choice
(4) fourth choice
(5) fifth choice

writing the number in the parentheses before each choice.

Example. What type of weather do you prefer?

(1) clear and warm
(2) raining and cold
(3) raining and warm
(4) clear and cold
(5) snowing and cold

---

10. Rank the following experience/education combinations for the project manager of a project in its development stage:

( ) Strong operational experience (more than 2 tours) and B.S. degree technical (engineering, science, math, etc.)
( ) Strong operational experience (more than 2 tours) and B.S. degree non-technical (Bus. Admin, management, financial)
( ) Two tours operational experience, MS degree technical area
( ) Two tours operational experience, MS degree non-technical
( ) Two tours operational experience, BS degree non-technical

11. Rank the following experience/education combinations for the project manager of a project in its production stage.

( ) Strong operational experience, BS degree technical
( ) Strong operational experience, BS degree non-technical
( ) Two tours operational experience, MS degree technical
( ) Two tours operational experience, MS degree non-technical
( ) Two tours operational experience, BS degree non-technical

12. Rank the follwoing education/functional training combinations for a LCDR/CDR WSAM subspecialist:

( ) MS degree technical, no management training

( ) MS degree non-technical, no technical training

( ) MS Systems Acquisition Management (PG School), no technical training

( ) MS degree Systems Acquisition Management (PG School), and Nuclear Power School/Test Pilot School

( ) MS degree Technical and functional management training

Write Rankings (1 thru 5) in parentheses before each choice:

---

13. Rank each of the following experience tours for a LCDR/CDR WSAM subspecialist in his first (Washington) tour:

( ) Assistant on project staff

( ) "Type Desk" for appropriate warfare specialty

( ) Operational Requirements Branch (OP -02, 03, 05, 09X, etc.)

( ) Research and Development (OP - 098, NVAMAT)

( ) Financial Management (Budget Coordination of Programs)

14. Rank each of the following experience tours for a LCDR/CDR WSAM subspecialist in his first (Field) tour:

( ) Naval plant representative for warfare specialty (NAVPRO, SUPSHIPS, etc.)

( ) Test Center (NATC PAX, Naval Missile Center, etc.)

( ) Operational Test and Evaluation Force (OPTEVFOR)

( ) Laboratory (NADC Johnsville, Naval Ordnance Lab, etc.)

( ) Repair Facility (NARFS, NAVSHIPYD, in project area)

15. Rank each of the following experience tours for a CDR WSAM subspecialist in his second tour:

( ) Principal assistant on project staff, where his previous tour was in Washington

( ) Principal assistant on project staff, where his previous tour was in field

( ) Naval plant representative where his previous tour was in Washington

( ) Test Center where previous tour was in Washington

( ) NARF or NAVSHPYD (senior billet) where previous tour was in Washington.

16. Rank each of the following assignments for a CDR WSAM subspecialist in his second WSAM tour (given requisite qualifications):

( ) Project technical director

( ) Project logistics manager

( ) Project production director

( ) Project deputy

( ) Project coordinator (OPNAV)

17. Rank each of the following areas of functional training for a LCDR/CDR while he is assigned to a WSAM billet:

( ) logistics

( ) contracting - procurement

( ) contracting - administration

( ) financial management - budgeting

( ) production and quality assurance

Section II. Agree-disagree Questions

Instructions: Answer each of the following questions by circling the number corresponding tothe most correct answer.

---

18. Present educational programs for the development of project managers are adequate.

1. Strongly agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree

19. Education and skill requirements are different for project managers in the development and production stages of a project.

1. Strongly agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree

20. Formal education in both technical and managerial areas is necessary for the development of project managers.

1. Strongly agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree

21. Recent operational experience of project manager is desirable enough to justify assigning approximately 15% of the SYSTEMS COMMAND "project-oriented" billets to unrestricted line WSAM officers.

1. Strongly agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree

22. A formal career development program for project managers, however flexible, is impractical considering the varying requirements of the many diverse projects.

1. Strongly agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree

23. The best solution to successful project management requires a team of officers and civilians with operational, technical and managerial backgrounds.

1. Strongly agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree

24. Test Pilot School or Nuclear Power School will provide a good technical background for officers with graduate education in management or other non-technical area.

1. Strongly agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree

25. Field activities like OPTEVFOR, SUPSHIPS or NAVPRO can be used to develop necessary skills in WSAM subspecialists.

1. Strongly agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree

26. The present number of projects should be decreased by consolidation into more comprehensive projects with larger and more specialized staffs.

1. Strongly agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree

27. The development of a WSAM community will harm the existing restricted line specialties.

1. Strongly agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree

Answer each of the following questions by circling the number of corresponding to the most correct answer.

---

28. A comprehensive program of short-term (one to three week) functional training courses should be used to supplement graduate education and Defense Systems Management School programs.

1. Strongly agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree

29. Force feeding of top unrestricted line officers into SYSTEMS COMMAND WSAM billets is necessary to maintain a mix of operationally qualified officers with technically qualified officers.

1. Strongly agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree

30. The recognition of command equivalence of major project management is an effective motivating force to attract qualified unrestricted line officers to the WSAM community and to repeated tours in this area.

1. Strongly agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree

31. A career pattern in WSAM should be developed for supply officers to enable them to serve as logistics managers, business managers, and - in appropriate circumstances - project managers.

1. Strongly agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree

32. The Operationl, Technical and Managerial System (OTMS) of sub-specialties will amount to nothing more than another grouping of personnel assets with no particular advantage to justify the disruptive effects of shifting restricted and unrestricted officers into new communities.

1. Strongly agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree

33. It would be feasible to use a career development plan for each individual in the WSAM community which would show the type of billets for which his performance, education, training and previous experience will qualify him.

1. Strongly agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree

34. The promotion opportunities for those in WSAM community will be good enough that a good performer will be able to have successive 3 year tours in WSAM billets without damaging his chances for promotion.

1. Strongly agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree

35. Project managers, prior to their assignment, should attend the Industrial College of the Armed Forces.

1. Strongly agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree

Answer each of the following questions by circling the number corresponding to the most correct answer.

---

36. The exchange of officers from Washington to field activities and vice versa (on a tour basis) will encourage greater cooperation between the two different types of activities.

1. Strongly agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree

37. Career development of project managers as a special pattern will tend to glamorize and aggrandize project management as the answer to all problems to the detriment of the functional organization.

1. Strongly agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree

38. The education programs and experience tours of the WSAM subspecialist must emphasize team work and the talent and experience of the rest of the organization, rather than individualism.

1. Strongly agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree

39. To a considerable degree project managers are born and not made.

1. Strongly agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree

40. My experience with weapon systems acquisition management has been as career enhancing as other forms of duty to which I might have been assigned.

1. Strongly agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree

Section III. Open-ended Questions

Instructions: Answer each question in the space provided with the question.

---

41. The tours of duty that served most to develop my competence in systems acquisition management were, in descending order of importance, the following:

Billet title	Time (months)

42. Referring to question 41, I would rather had a tour in

_____ rather than in the billet

_____ listed above.

43. Based on my experience as a project manager or in systems acquisition, I would select the following five graduate level majors (priority 1 through 5) as being the most important to the development of a competent project manager:

( ) Business Administration (Harvard, Stanford, etc.)

( ) Financial Management

( ) Industrial Management

( ) Personnel Management

( ) Material Management

( ) Industrial Engineering

( ) Operations Research

( ) Systems Acquisition Management

( ) Systems Analysis

( ) Mathematics

( ) Science (Specific Field _____)

( ) Engineering (Specific Field _____)

( ) Other (Specific Field _____)

Answer each question in the space provided.

---

44. While in my present assignment, I have had the following functional training: (give title, location and length of course)

Title	Location	Length

45. In my present assignment area the following billets filled by naval officers should be identified as WSAM-related billets and filled by unrestricted line/restricted line/staff officers, with technical/ managerial background, of grade (LCDR, CDR, CAPT):

Billet title	URL/RL/Staff	Expertise	Grade

46. I especially depend upon the professional competence of the following members of my staff (by billet title) to compensate for my lack of expertise in the indicated areas:

Billet title	Grade	URL/RL/Staff	Professional area

47. I would have benefited by receiving more education/training/ or experience in the following areas:

Area	Education/training/experience

48. I have the following suggestions for Career Development of Navy Project Managers - not already identified or commented on.

Question Number	Related Questions	Answer	PCT	Mean	Std Dev (Variance)	Answer	PCT	Mean	Std Dev (Variance)
12E	12A,B,C,D	1	57.5	1.636	0.958 (0.919)	1	80.5	1.222	0.500 (0.250)
13A	13B,C,D,E	1	60.0	1.912	1.361 (1.853)	1 2	48.8 34.1	1.753	0.969 (0.938)
13B	13A,C,D,E	2 4	31.3 21.2	2.975	1.340 (1.797)	1 2	34.1 20.4	2.346	1.296 (1.679)
13C	13A,B,D,E	3 4	28.7 26.2	3.012	1.217 (1.481)	4 5	35.4 25.6	3.675	1.111 (1.235)
13D	13A,B,C,E	4 5	27.5 23.7	3.400	1.259 (1.585)	4 5	34.1 23.2	3.537	1.222 (1.492)
13E	13A,B,C,D	5 3	38.7 28.7	3.700	1.247 (1.554)	5 3	37.8 26.8	3.691	1.251 (1.556)
14A	14B,C,D,E	4 3	33.7 22.5	3.162	1.277 (1.631)	1 4 2	34.1 20.7 19.5	2.568	1.457 (2.123)
14B	14A,C,D,E	2 1	36.2 26.2	2.362	1.161 (1.348)	3 4	30.5 26.8	2.901	1.136 (1.290)
14C	14A,B,D,E	1 2	35.0 25.0	2.412	1.384 (1.916)	3 4	24.4 24.4	3.037	1.289 (1.661)
14D	14A,B,C,E	3 5	30.0 21.2	3.175	1.290 (1.665)	5 3	30.5 23.2	3.370	1.409 (1.986)
14E	14A,B,C,D	5	50.0	3.887	1.396 (1.949)	5 1	35.4 23.2	3.123	1.646 (2.710)
15A	15B,C,D,E	1 2	52.5 26.2	1.862	1.177 (1.386)	1 5	31.7 20.7	2.667	1.525 (2.325)
15B	15A,C,D,E	2 1	42.5 37.5	2.025	1.165 (1.358)	2 1	39.0 37.8	2.000	1.095 (1.200)
15C	15A,B,D,E	4 3	28.7 27.5	3.487	1.192 (1.422)	4 3	35.4 23.2	3.049	1.234 (1.523)

Question Number	Related Questions	URL Answer	URL PCT	URL Mean	URL Std Dev (Variance)	RL Answer	RL PCT	RL Mean	RL Std Dev (Variance)
15D	15A,B,C,E	3 4	42.5 26.2	3.397	0.998 (0.996)	4 3,5	31.7 24.4	3.587	1.166 (1.359)
15E	15A,B,C,D	5 4	46.2 28.7	4.154	0.981 (0.963)	5 3	39.0 22.0	3.675	1.329 (1.766)
16A	16B,C,D,E	1 3	35.0 21.2	2.714	1.191 (1.417)	3 2	29.3 28.0	2.506	1.185 (1.403)
16B	16A,C,D,E	5 4	28.7 26.2	3.584	1.250 (1.562)	4 5	34.1 25.6	3.531	1.285 (1.652)
16C	16A,B,D,E	4 3	33.7 32.5	3.584	1.018 (1.036)	4 3	32.9 29.3	3.173	1.116 (1.245)
16D	16A,B,C,E	1	55.0	1.936	1.293 (1.671)	1	48.8	2.235	1.477 (2.182)
16E	16A,B,C,D	5	33.7	3.169	1.584 (2.511)	5	42.7	3.432	1.557 (2.423)
17A	17B,C,D,E	2 5	27.5 22.5	3.150	1.351 (1.825)	5 4	29.3 28.0	3.481	1.379 (1.903)
17B	17A,C,D,E	3 4	26.2 26.2	3.325	1.261 (1.589)	2 1	31.7 24.4	2.432	1.161 (1.348)
17C	17A,B,D,E	4 5	26.2 22.5	3.300	1.306 (1.706)	3 1,4	24.4 22.0	2.951	1.387 (1,923)
17D	17A,B,C,E	1 2	48.7 17.5	2.087	1.295 (1.676)	1 2	28.0 20.7	2.691	1.437 (2.066)
17E	17A,B,C,D	5 1	25.0 22.5	3.037	1.505 (2.264)	5	31.7	3.321	(2.246) 1.499

Question Number	Related Questions	URL Answer	URL PCT	URL Mean	URL Std Dev (Variance)	RL Answer	RL PCT	RL Mean	RL Std Dev (Variance)
18	20,21,23,38,28	2 3	43.8 28.7	2.759	0.964 (0.929)	2 3	40.2 30.5	2.790	0.918 (0.843)
19	18,20,21,23,38,28	2	56.3	2.563	(1.287)	4 2	41.5 31.7	3.000	1.197 (1.432)
20	18,19,21,23,38,28	2 1	36.2 33.7	2.275	1.263 (1.594)	1 2	40.2 35.4	2.037	1.116 (1.246)
21	18,20,21,23,38,28	1	56.3	1.737	1.156 (1.335)	2	53.7	2.610	1.173 (1.377)
22	25,31,33	4	53.7	3.575	1.088 (1.184)	4	47.6	3.366	1.149 (1.321)
23	18,20,21,38,28	1	63.7	1.412	0.630 (0.397)	1	62.2	1.427	0.629 (0.396)
24	23	2	52.5	2.526	0.893 (0.789)	3 4 2	30.5 29.3 28.0	3.207	1.015 (1.031)
25	22,31,33	2	63.7	2.450	0.870 (0.757)	2	62.2	2.296	0.887 (0.786)
26		4 5	41.2 16.2	3.418	1.172 (1.375)	4	40.2	3.463	1.219
27		4	52.5	3.625	0.862 (0.744)	4 3	40.2 29.3	3.259	0.972 (0.944)
28	18,20,21,38,23	2	58.7	1.987	0.798 (0.636)	2	63.4	2.074	0.848 (0.719)
29		2 1	42.5 31.3	2.167	1.167 (1.361)	4 2	40.2 34.1	3.210	1.232 (1.518
30		2	40.0	2.519	1.197 (1.432)	2	42.7	2.707	1.024 (1.049)

Question Number	Related Questions	URL Answer	URL PCT	URL MEAN	URL Std Dev (Variance)	RL Answer	RL PCT	RL Mean	RL Std Dev (Variance)
31	22,33,25	2	51.2	2.308	0.998 (0.995)	2	54.9	2.488	1.045 (1.092)
32		4 3	41.2 36.2	3.278	0.891 (0.793)	3 4	47.6 28.0	2.963	0.887 (0.786)
33		2	56.3	2.595	0.968 (0.936)	2	51.2	2.585	0.955 (0.912)
34		3 4	42.5 25.0	3,000	0.920 (0.846)	2 3	35.4 35.4	2.817	0.918 (0.843)
35		4 3	33.7 30.0	3.038	1.001 (1.006)	4 3	36.6 34.1	3.268	0.943 (0.890)
36		2	60.0	1.987	0.840 (0.705)	2	68.3	1.951	0.752) (0.565)
37		4	53.7	3.525	0.856 (0.734)	4	47.6	3.122	0.974 (0.948)
38		2 1	45.0 37.5	1.962	1.037 (1.075)	2	58.5	2.012	0.859 (0.737)
39		4 5	42.5 25.0	3.625	1.216 (1.478)	4 5	37.8 18.3	3.366	1.202 (1.445)
40		2 1	33.7 16.2	2.795	1.333 (1.776)	2 1	43.9 35.4	1.951	0.942 (0.886)

APPENDIX H: SELECTED QUOTATIONS FROM QUESTIONNAIRE RETURNS

Question 48. I have the following suggestions for Career Development of Navy Project Managers - not already identified or commented on.

1. Program Characteristics

(Flag, URL, Surface) Do not force any officer to enter the PM Field. Do not make it a specific field such that outstanding individuals from other communities are excluded. Do not develop a specialized group. Every project does not need a project manager. If the job is too small, it could be an affront. Do not over-exaggerate a PM. The Navy still has to go to sea to satisfy its reason for existence. I would still like to see PM's who had just been at sea in related ops or who could be headed that way.

(Captain, RL, Electronics) Program for development: Select officers at LT or junior LCDR. Determine best type of Project management for which they are best suited (ships, aircraft, electronics). Assign them duty on PM staff after postgraduate school, then in field assignment. Let them attend the Defense Management Course and then assign them duty on the PM staff. Send them to the Executive Refresher Course and then select them for Project Manager.

(Captain, R1, Surface) Virtually all types of Navy assignements can contribute to the development of a project manager, but familiarity with the "Washington Scene" is a must. Knowledge of the relationships among echelons of the DOD/NAVY headquarters and the informal as well as the formal procedures which are most successful can probably only be obtained in a Washington tour.

(Captain, URL, Aviation) I don't believe we need another officer specialist! I believe a project manager is nothing more than a well rounded (experienced) Naval Officer with a few additional qualifications. Don't kid yourself - an advanced management/technical education is only a tool to be used by a project manager. An individual with little or no advanced education, but who can talk on his feet, use people properly and be willing to work twelve hours a day, can be a project manager.

(Captain, R1, ORD) I would resist becoming mechanical, requiring this or that before something else. This leads to people getting their tickets punched. I believe that major assignments should be made by selection board on maturity and performance and not whether or not a fellow has been in all the right places.

(LCDR, R. Aviation) The Systems Acquisition Management curriculum should devote at least half the course work to non-Washington areas, i.e. field activities. In particular, the relation between field activities and SYSCOMS (Administrative Contracting Officers and Procurement Contracting Officers) should be stressed.

(Captain, URL, Aviation) This field should be a voluntary on which has certainly not been the case in this circumstance. There should be enough good people to fill all the key jobs (including project manager billets and other choice billets). However, a personal voluntary desire to fill a PM slot would help ensure that the managerial positions are filled by people desirous of doing such work... I feel that there are ample WSAM personnel to fill the choice jobs without assigning a non-volunteer, who would prefer a sea duty or a field activity billet.

2. Promotion

(CDR, URL, Aviation) Promotion opportunities for URL is still operationally oriented. No amount of training or experience in any subspecialty area is going to change that. Most OM jobs are held by RL types (ED or AEDO) which doesn't allow much either.

(Captain, URL, Surface) Promises and statements about successful project managers receiving credit for their projects (i.e. promotions) produce expectations that cannot be fulfilled. This type of publicity produces disillusionment and probably does more harm than good.

(CDR, RL, Subsurface) I feel that the current Engineering Duty Officer policy of identifying a career pattern in project management is an improvement over the old approach of obtaining experience in all areas (industrial, scientific and acquisition). With longer tours, time does not allow experience in all areas.

(Captain URL, Subsurface) When and if project management in the Navy ever gets the image of a viable career, staffed by top notch officers, career development will take care of itself. Currently, by detailing and selection records, this is not the case. If it is important, put more top-notch people in.

(Captain, RL, Surface) Breed carefully - select rigorously! They'll surface naturally. You aren't going to make them by more education or training.

(Captain, RL, Electronics) I think the line WSAM subspecialist will not likely succeed in the advantage the RL/CEC/SC officer has in being able, actually, to have repeat tours in the acquisition business, to learn it before he becomes a boss, and still get promoted. The URL will never be able to provide this.

3. Operational Vs. Technical Qualification

(CDR, RL, Subsurface) Project managers should come from the restricted line and have considerable hardware experience. Technical education curriculrat the master's level should include some courses in business administration. Project management is in no way a cook book business. Our best managers are versatile people with a sound hardware background augmented by business management study and a facility to work with people. They will develop with time andcertainly will not suddenly appear at any graduation ceremony.

(CDR, URL, Surface) Success as a project manager is more dependent on possessing good judgment and strong leadership ability, than on completing a given academic package, or following a prescribed career pattern. Selecting officers that can get the job done, regardless of management training or extensive experience in weapons systems acquisition, is the crucial issue. Many operationally-oriented officers are well-suited for project manager positions, and they should not be overlooked in the selection process.

(Captain, URL, Subsurface) The experience I have ahd leads me to believe that a WSAM must have a thorough knoledge of the budgeting and programming process, balanced by practical technical expertise which appreciates industrial and developmental realities in terms of capabilities and limitations. To achieve expertise in these areas, the career pattern must provide for experience rather than education or training in order that the everview control can be substantive and practical.

(Captain, URL, Surface) WSAM including repeated tours in the same field, is valuable to the Navy but one should not in any way permit WSAM process to be controlled by officers who are not first and foremost seagoing.

(Flag, URL, Aviation) Strong operational experience is the most essential element. A good foundation in the basic principles of management is the next most important. A good grasp of technical details is necessary but the manager need not be an "expert" or highly educated or trained in a specific area. In some cases being over trained on a particular area or subject is a disadvantage in the broad aspects of program management. Success or failure is usually determined by thoroughness and attention to detail.

(Captain, URL, Aviation) Don't be afraid to get your feet wet technically. An expert is only a relative term. There are damn few of them around and they usually disagree. Self study and a probing, inquisitive mind are worth three advanced degrees. People don't teach you, they only help you to learn. Never forget that project management is 98% just good leadership and common sense. Challenge your technical people. This attitude on the part of the boss is a real force multiplier. Make your own career pattern. No one can do it for you.

4. Command and First Tour

(Captain, URL, Aviation) I believe that "command" and "management" are synonymous with respect to basic career requirements. Each requires an appreciation of the need for a team effort, recognition of the differences in human personalities, and operational experience. There is too much emphasis placed on whether the project manager should be technically or managerially trained. Both apply, and in most instances, the combined qualifications can be gained through both experience and formal education.

(CDR, URL, ORD) Try to get assigned to very small project office where you can have greater responsibility (and authority). Larger offices tend to use the classical approach to management. They are less decisive and look for ways to defer coming to grips with the tough problems that must be faced on a daily basis.

(CDR, URL, Surface) Give them to someone else! I don't want a URL on his first tour in this area. A sea-going URL has no background for this area without early tours in Washington in the same area.

(Captain, URL, Electronics) I feel that young officers -- perhaps on their first tour, could gain valuable experience and save the government millions of dollars if they were assigned as project managers to less than major programs. The young officer could inject the requirement, operational environment T & E service, etc. and at the same time be learning how the Material Command really works.

(CDR, URL, Aviation) There appears to be little difference in the type of man desired for a Navy Project Manager from that for command at sea. The major emphasis is on knowledge of his craft and great leadership ability. Capability for leadership has not always been emphasized in project manager selection but it is just as important as it is for command at sea. The technical craft in which he specializes is markedly different from that required for sea. It and his management expertise should be much more highly developed. To compensate, the requirement for operational expertise is proportioned lessened in the project manager billet.

5. Summary

(Captain, RL, Aviation) I propose establishment of a WSAM information "clearing house" in NAVMAT staff to assemble and disseminate to WSAM-tagged project management information of general nature pertinent to project management. The same office should keep available for reference historical information on particularly unsiccessful as well as successful projects in order to make good and bad experience from the entire gamut of WSAM available to all active managers.

(Captain, RL, Subsurface) Project Management is a bastardized term and really means nothing unless qualified as to:
(1) what kind of project, (2) how much layering (levels of management), (3) proper quality and quantity of resources (people), (4) paper tiger or really productive unit, (5) is the project really necessary or another bandaid solution that won't solve the basic problem - we still need good leaders.

(Captain, URL, Aviation) It is the same story - get a good performer and you don't have a problem. Get a weak one and career development isn't going to help much.

(Flag, URL, Subsurface) Pick a good aggressive man! Then give him some responsibility and freedom.

APPENDIX I REVISED FITNESS REPORT FORM

REPORT ON THE FITNESS OF OFFICERS

APPRAISAL WORK SHEET

1. NAME (Last, First, Mid Ile)	2. GRADE	3. DESIG	4. SSN

5. SUBSPECIALTY CODE	6. UNIT ID CODE	7. SHIP OR STATION	8. DATE REPORTED

OCCASION OF REPORT
9. ☐ PERIODIC 10. ☐ DETACHMENT OF OFFICER 11. ☐ DETACHMENT OF REPORTING SENIOR

PERIOD OF REPORT
12. FROM 13. TO

TYPE OF REPORT
14. ☐ REGULAR 15. ☐ CONCURRENT 16. ☐ SPECIAL

BASIS FOR OBSERVATION
17. ☐ CLOSE 18. ☐ FREQUENT 19. ☐ INFREQUENT

20. EMPLOYMENT OF COMMAND
Summarize major activities of command during this reporting period; do not use codes, names, unusual or extreme abbreviations.

21. COMBAT DAYS

22. REPORTING SENIOR	23. TITLE	24. GRADE	25. DESIG	26. SSN

GENERAL INSTRUCTIONS:

ALL EVALUATIONS MADE IN THIS REPORT SHALL BE IN COMPARISON WITH OFFICERS OF THE SAME GRADE, COMPETITIVE CATEGORY (I.E., UNRESTRICTED LINE WITH UNRESTRICTED LINE, SUPPLY CORPS WITH SUPPLY CORPS, ETC.), AND APPROXIMATE TIME IN GRADE WHOM YOU HAVE KNOWN.

THIS APPRAISAL WORK SHEET IS DESIGNED TO SERVE TWO PURPOSES: FIRST, TO ASSIST IN PREPARATION OF THE OCR SHEET/RECORD COPY, AND SECOND, TO PROVIDE GUIDELINES FOR THE PERFORMANCE APPRAISAL DISCUSSION.

DUE TO SPACE LIMITATIONS OF THE OCR SHEET, IT IS NECESSARY TO TRANSCRIBE PERCENTILE EVALUATION MARKS AND CORRESPONDING OCR CODE LETTERS AS RECORDED IN ITEMS 28 THROUGH 51. TO PREVENT TRANSCRIPTION ERROR, AN OCR CODE LETTER BOX HAS BEEN PROVIDED FOR EACH OF THESE ITEMS TO FACILITATE TRANSFER OF THE INFORMATION TO THE OCR SHEET.

GENERAL COMMENTS ARE REQUIRED IN ITEM 83. ANY MARK IN BOXES WITH AN ASTERISK (*) INDICATES ADVERSITY AND SUPPORTING COMMENTS ARE REQUIRED IN ITEM 83. THE OFFICER RECEIVING ADVERSE MARKS MUST BE INFORMED OF SUCH AND BE GIVEN THE OPPORTUNITY TO MAKE A STATEMENT.

27. DUTIES ASSIGNED. Identify principal duties assigned, primary collateral duties and watch qualifications, indicating number of months assigned each during the period of report. Indicate inclusive dates of periods of non availability due to hospitalization, temporary additional duty, and leave and travel between duty stations. For reports based on other than "Close Observation", indicate after primary duty the number of months duties assigned followed by the number of months duties were performed physically separated from the reporting senior, if available (e.g., 6/4). This job description along with command mission should be discussed with the officer early in the reporting period.

MISSION CONTRIBUTION. Evaluate the officer's performance with regard to his contribution to the unit's mission, including effective integration of the men and the mission and completion of his assigned tasks.

EVALUATION. Indicate evaluation by placing an "X" in appropriate box and provide supporting comments in item 83 emphasizing how well the officer contributed to mission accomplishment while effectively integrating men and the mission.

SUMMARY DISTRIBUTION. Enter the total of all officers of this rank and competitive category marked in each applicable box of item 28 on reports submitted by you on this occasion. Enter N for none. Include this officer in the summary. Include Regular, Concurrent, and Special reports submitted by you on officers of this rank on this occasion.

		TOP				TYPICALLY EFFECTIVE OFFICER		BOTTOM		
PERCENTILE	NOT OBS	1%	2 to 5%	10%	30%	50 to 70%	50%	30 to Marg	Marg	Unsat
28. EVALUATION										
29. SUMMARY										

RECOMMENDATION FOR PROMOTION. As a consequence of this officer's exhibited performance and potential during this evaluation period I would recommend (indicate recommendation by "x" in appropriate box).

30. ☐ EARLY PROMOTION 31. ☐ REGULAR PROMOTION 32. ☐ NO PROMOTION*

IF THIS OFFICER IS RECOMMENDED FOR EARLY PROMOTION, rank him with all officers of the same grade and competitive category recommended for early promotion during the reporting period. Indicate total number of such officers in the "number recommended" box. Indicate this officer's ranking in the "ranking" box. If the officer is 2 of 3 place a "2" in the "ranking" box, if he is 1 of 1, place a "1" in the box.

33. [ ] NUMBER RECOMMENDED 34. [ ] RANKING

DEMONSTRATED SKILLS.
Demonstrated proficiency and knowledge in executing his warfare specialty. Indicate evaluation in each applicable skill area by selecting appropriate percentile score from the scale and placing the transcription code letter in the OCR code letter box.

TRANSCRIPTION CODE	(N)	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)
		TOP				TYPICALLY EFFECTIVE OFFICER		BOTTOM		
PERCENTILE	NOT OBS	1%	5%	10%	30%	50%	50%	30%	Marg	Unsat

		OCR CODE LETTER
SEAMANSHIP/SHIPHANDLING	35.	
AIRMANSHIP	36.	
WATCH STANDING	37.	

SUBSPECIALTY (Complete if applicable)

SUBSPECIALTY NAME. Enter subspecialty names (abbreviate if necessary)	SUBSPECIALTY REQUIRED BY BILLET. Indicate whether billet is subspecialty coded	SUBSPECIALTY UTILIZATION. Indicate degree of utilization of subspecialty.	OCR CODE LETTER
38. _____	39. ☐ YES 40. ☐ NO	41. ☐ FREQUENT 42. ☐ INFREQUENT 43. ☐ NONE	44.
45. _____	46. ☐ YES 47. ☐ NO	48. ☐ FREQUENT 49. ☐ INFREQUENT 50. ☐ NONE	51.

SUBSPECIALTY PERFORMANCE. Indicate evaluation of subspecialty performance by selecting appropriate percentile score from the scale and placing the transcription code letter in the OCR code letter box.

TRANSCRIPTION CODE	(N)	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)
		TOP				TYPICALLY EFFECTIVE OFFICER		BOTTOM		
PERCENTILE	NOT OBS	1%	5%	10%	30%	50%	50%	30%	Marg	Unsat

SPECIFIC ASPECTS OF PERFORMANCE. The following items are specific aspects of performance. Each aspect has the subitems listed below it to assist in defining it and to provide guidelines for the performance appraisal discussion. As you evaluate the officer on each performance aspect, review the subitems and place marks in the appropriate boxes to the right of each sub item. The marks in the sub item boxes are guidelines only. This work sheet is removed by the reporting command for the performance appraisal discussion. It is not forwarded with the OER Sheet. After reviewing the subitems, and indicating strengths and areas requiring greater emphasis, select percentile score from the scale below and place the appropriate transcription code letter in the OER code letter box to the right of each item for transfer to the OER Sheet, items 52 to 61.

TRANSCRIPTION CODE	(N)	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)
		TOP				TYPICALLY EFFECTIVE OFFICER		BOTTOM		
PERCENTILE	NOT OBS	1%	5%	10%	30%	50%	50%	30%	MARG	UNSAT*

	Not Applicable	A Strength	Needs Greater Emphasis	OER CODE LETTER
52. Goal Setting and Achievement				
a. Defines goals	☐	☐	☐	
b. Develops plans and priorities	☐	☐	☐	
c. Involves subordinates in planning	☐	☐	☐	
d. Implements plans effectively	☐	☐	☐	
e. Adjusts to changing circumstances	☐	☐	☐	
f. Other _____	☐	☐	☐	
53. Subordinate Development and Management				
a. Establishes equitable and consistent policies.	☐	☐	☐	
b. Considers the ideas and suggestions of subordinates.	☐	☐	☐	
c. Is effective in personal supervision.	☐	☐	☐	
d. Places subordinates in challenging situations to develop their abilities	☐	☐	☐	
e. Delegates authority commensurate with subordinates' capabilities.	☐	☐	☐	
f. Other _____	☐	☐	☐	
54. Working Relations				
a. Works for high morale while accomplishing mission.	☐	☐	☐	
b. Encourages two-way communication.	☐	☐	☐	
c. Encourages subordinates' initiatives in accomplishing tasks	☐	☐	☐	
d. Gives personal counseling and timely performance appraisal.	☐	☐	☐	
e. Other _____	☐	☐	☐	
55. Equipment and Material Management				
a. Is familiar with equipment	☐	☐	☐	
b. Considers economy in equipment and material management	☐	☐	☐	
c. Encourages resourcefulness in maximum utilization	☐	☐	☐	
d. Is committed to improvement of working and living environment	☐	☐	☐	
e. Supports organized maintenance programs	☐	☐	☐	
f. Other _____	☐	☐	☐	
56. Navy Organization Support				
a. Exhibits positive attitude toward the Navy	☐	☐	☐	
b. Observes two-way chain of command	☐	☐	☐	
c. Seeks or accepts responsibility	☐	☐	☐	
d. Uses authority properly.	☐	☐	☐	
e. Strives for professional self-improvement	☐	☐	☐	
f. Other _____	☐	☐	☐	
57. Response in Stressful Situations				
a. Recognizes potential hazards	☐	☐	☐	
b. Retains composure and effectiveness	☐	☐	☐	
c. Acts decisively	☐	☐	☐	
d. Sees situation through to completion.	☐	☐	☐	
e. Other _____	☐	☐	☐	
58. Race and Intercultural Relations				
a. Takes effective action to increase his own and his subordinates' racial awareness	☐	☐	☐	
b. Initiates and supports the Navy's equal opportunity goals, programs and directives.	☐	☐	☐	
c. Considers minority groups in planning and implementation of personnel actions	☐	☐	☐	
d. Takes action to improve relations with host nationals overseas.	☐	☐	☐	
e. Interacts positively with people of other cultures.	☐	☐	☐	
f. Other _____	☐	☐	☐	
59. Personal Behavior				
a. Sets worthy personal example	☐	☐	☐	
b. Exercises discretion in public behavior.	☐	☐	☐	
c. Maintains military bearing and appearance	☐	☐	☐	
d. Works harmoniously with peers	☐	☐	☐	
e. Promotes favorable Navy image	☐	☐	☐	
f. Other _____	☐	☐	☐	

60. Speaking Ability
Ability to express himself orally in an effective manner. ☐ OER CODE LETTER

61. Writing Ability
Ability to express himself in writing in an effective manner ☐ OER CODE LETTER

TREND OF PERFORMANCE. Indicate trend of officer's performance since your last report. 62. ☐ FIRST REPORT 63. ☐ CONSISTENT 64. ☐ IMPROVING 65. ☐ DECLINING*

FURTHER EDUCATION. Based on your observation of this officer's educational interest and aptitude, indicate your recommendation for the officer's education. Check as appropriate and provide supporting comments in item 83. 66. ☐ GRAD SCHOOL 67. ☐ SERVICE COLLEGE 68. ☐ OTHER 69. ☐ N/A

70/71. STATEMENT. The officer shall indicate if he does not desire to make a statement or if a statement is attached.

72. SIGNATURE OF OFFICER EVALUATED. In the interest of maintaining effective communications with subordinates, reporting seniors are required to conduct an informal performance appraisal discussion using this work sheet as a guideline. The evaluated officer's signature is required on the OER Sheet.

73. DATE FORWARDED. Date reporting senior signed and forwarded report. 74. SIGNATURE OF REPORTING SENIOR.

75. DATE FORWARDED. Date regular reporting senior signed and forwarded concurrent or special report.

76. SIGNATURE OF REGULAR REPORTING SENIOR ON CONCURRENT AND CONCURRENT/SPECIAL REPORT.

DESIRABILITY. Indicate your attitude toward having this officer under your command in the following categories of assignment

	NOT OBSERVED	PARTICULARLY DESIRE	PREFER	PLEASED	SATISFIED	PREFER NOT*
77. COMMAND	☐	☐	☐	☐	☐	☐
78. OPERATIONAL	☐	☐	☐	☐	☐	☐
79. STAFF	☐	☐	☐	☐	☐	☐
80. JOINT OSD	☐	☐	☐	☐	☐	☐
81. FOREIGN SHORE	☐	☐	☐	☐	☐	☐
82. SUBSPECIALTY	☐	☐	☐	☐	☐	☐

83. COMMENTS. Length of comments must not exceed space provided. Include comments pertaining to unique skills and distinguishing characteristics important to career development and future assignment. A mark in boxes with an asterisk (*) indicates adversity and supporting comments are required.

REPORT ON THE FITNESS OF OFFICERS

OCR SHEET/RECORD COPY

1. NAME (Last, First, Middle)	2. GRADE	3. DESIG	4. SSN

5. SUBSPECIALTY CODE	6. UNIT ID CODE	7. SHIP OR STATION	8. DATE REPORTED

OCCASION FOR REPORT			PERIOD OF REPORT	
9. ☐ PERIODIC	10. ☐ DETACHMENT OF REPORTING SENIOR	11. ☐ DETACHMENT OF OFFICER	12. FROM:	13. TO:

TYPE OF REPORT			BASIS FOR OBSERVATION		
14. ☐ REGULAR	15. ☐ CONCURRENT	16. ☐ SPECIAL	17. ☐ CLOSE	18. ☐ FREQUENT	19. ☐ INFREQUENT

20. EMPLOYMENT OF COMMAND	21. DAYS OF COMBAT

22. REPORTING SENIOR	23. TITLE	24. GRADE	25. DESIG	26. SSN

27. DUTIES ASSIGNED

MISSION CONTRIBUTION (Indicate evaluation by "X" in appropriate box.)	NOT OBS	TOP 1%	TOP 5%	TOP 10%	TOP 30%	TYPICALLY EFFECTIVE OFFICER 30%	TYPICALLY EFFECTIVE OFFICER 50%	BOTTOM 30%	BOTTOM Marg	BOTTOM Unsat*
28. EVALUATION	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
29. SUMMARY DISTRIBUTION	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

RECOMMENDATION FOR PROMOTION (Indicate recommendation by "X" in appropriate box.)	30. ☐ EARLY PROMOTION	31. ☐ REGULAR PROMOTION	32. ☐ NO PROMOTION*
RANKING FOR EARLY PROMOTION	33. ☐ NUMBER RECOMMENDED	34. ☐ RANKING	

DEMONSTRATED SKILLS (Type in OCR code letter from work sheet)	35. ☐ SEAMANSHIP/ SHIPHANDLING	36. ☐ AIRMANSHIP	37. ☐ WATCH STANDING

SUBSPECIALTY. (Type in OCR code letter from work sheet in items 44 and 51.)

SUBSPECIALTY NAME	SUBSPECIALTY REQUIRED BY BILLET		SUBSPECIALTY UTILIZATION			SUBSPECIALTY PERFORMANCE
38. _____	39. ☐ YES	40. ☐ NO	41. ☐ FREQUENT	42. ☐ INFREQUENT	43. ☐ NONE	44. ☐
45. _____	46. ☐ YES	47. ☐ NO	48. ☐ FREQUENT	49. ☐ INFREQUENT	50. ☐ NONE	51. ☐

SPECIFIC ASPECTS OF PERFORMANCE. (Type in OCR code letter from work sheet.)

52. ☐ GOAL SETTING AND ACHIEVEMENT	53. ☐ EQUIPMENT & MATERIAL MANAGEMENT	54. ☐ RACIAL AND INTERCULTURAL RELATIONS	55. ☐ WRITING ABILITY
56. ☐ SUBORDINATE MANAGEMENT & DEVELOPMENT	57. ☐ NAVY ORGANIZATION SUPPORT	58. ☐ PERSONAL BEHAVIOR	
59. ☐ WORKING RELATIONS	60. ☐ RESPONSE IN STRESSFUL SITUATIONS	61. ☐ SPEAKING ABILITY	

TREND OF PERFORMANCE	62. ☐ FIRST REPORT	63. ☐ CONSISTENT	64. ☐ IMPROVING	65. ☐ DECLINING*
FURTHER EDUCATION	66. ☐ GRAD. SCHOOL	67. ☐ SERVICE COLLEGE	68. ☐ OTHER	69. ☐ N/A

*A mark in this box indicates adversity and supporting comments are required. Enter comments in section 83 on the record copies only. The officer receiving adverse marks must be informed of such and be given the opportunity to make a statement.

"I acknowledge that I have been apprised of my performance and I have seen the Appraisal Work Sheet."

STATEMENT 70. ☐ NOT DESIRED 71. ☐ ATTACHED

72. SIGNATURE OF OFFICER EVALUATED.

73. DATE FORWARDED	74. SIGNATURE OF REPORTING SENIOR
75. DATE FORWARDED	76. SIGNATURE OF REGULAR REPORTING SENIOR ON CONCURRENT AND CONCURRENT/SPECIAL REPORT

26. EMPLOYMENT OF COMMAND (Continued)

27. DUTIES ASSIGNED (Continued)

DESIRABILITY. Indicate your attitude toward having this officer under your command in the following categories of assignment.

	NOT OBSERVED	PARTICULARLY DESIRE	PREFER	PLEASED	SATISFIED	PREFER NOT*
77. COMMAND	☐	☐	☐	☐	☐	☐
78. OPERATIONAL	☐	☐	☐	☐	☐	☐
79. STAFF	☐	☐	☐	☐	☐	☐
80. JOINT/OSD	☐	☐	☐	☐	☐	☐
81. FOREIGN SHORE	☐	☐	☐	☐	☐	☐
82. SUBSPECIALTY	☐	☐	☐	☐	☐	☐

83. COMMENTS. Length of comments must not exceed 5, box provided. Include comments pertaining to unique traits and distinction that may be important to career development and future assignment. A mark in boxes with an asterisk (*) indicates adversity and supporting comments are required.

APPENDIX J

SUGGESTED LIST OF NAVAL OFFICER BILLET CLASSIFICATION CODES (NOBC's)

The attached list of NOBC's was used as a starting point in a computer search of the Navy billet structure to identify those billets which might be designated as Project Manager Support Billets a billet identified as appropriate for the military incumbent to acquire the experience and training necessary to compete for selection as Project Manager or Major Project Manager*). Since the effort was aimed at identifying developmental billets only, NOBC's 2160 (Designated Project Manager) and 2161 (Major Project Manager (selected)) were intentionally omitted and not used. This approach has two areas of weakness:

1. The NOBC descriptions contained in the Manual of Navy Officer Classifications (NAVPERS 15839B) are very broad and do not list all of the duties performed by the incumbent.

2. It is apparent that some desirable developmental billets have been assigned NOBC's which are more descriptive of the qualifications required of, rather than the duties to be performed by, the incumbent. For example, the billet for the Deputy Assistant Program Coordinator, DD-963 in OPNAV has been assigned NOBC 9228 (Executive Officer, Afloat).** These two points serve to emphasize the preliminary nature of the effort presented here. While the list of billets identified by the computer search appeared to include most of the billets recommended by questionnaire respondents, it is the opinion of the authors that a thorough examination of detailed billet descriptions within appropriate naval activities is required in order to assure complete identification and maximum utilization of Project Manager Support Billets.

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* OPNAV INSTRUCTION 1211.8, Subject: Manpower Policy in the Weapon Systems Acquisition Field, 19 January 1972, encl. (1), p.1.

** Annual Officer Billet Summary (Senior Officer Edition) (NAVPERS 15993), (Part IV Page 0084), p. 0260.

SELECTED NAVAL OFFICER BILLET CLASSIFICATION CODES USED TO IDENTIFY BILLETS WHICH MIGHT BE USED TO DEVELOP WSAM EXPERIENCE IN POTENTIAL PROJECT MANAGERS;

Field: SUPPLY AND FISCAL

NOBC	TITLE
1015	Auditing Officer
1025	Budget Officer
1050	Comptroller
1055	Fiscal Officer
1440	Materials Priority and Allocation Officer
1475	Supply Material Inspector
1476	Procurement Management Officer
1480	Prócurement Contracting Officer
1485	Administrative Contracting Officer
1520	Inventory Finance Officer
1920	Equipment Program Support Officer
1984	Supply Plans Officer

FIELD: SCIENCES AND SERVICES

NOBC	TITLE
2105	Air Warfare Research Officer (General)
2107	Air Warfare Research Officer (Antisubmarine
2125	Amphibious Warfare Research Officer
2165	Assistant Designated Project Manager
2170	Designated Project Support Officer
2180	Preoperational Test and Evaluation Officer
2181	Operational Test and Evaluation Officer
2190	Liaison Officer, Naval Research and Development
2305	Air Navigational Program Officer
2310	Hydrographic Program Officer
2321	Oceanographic Program Officer

FIELD: ELECTRONICS ENGINEERING

NOBC	TITLE
5904	Electronics Engineering Officer
5913	Electronics Engineering Plans and Policies Director
5917	Electronic Equipment Research Officer (General)
5940	Electronic Equipment Production Expediting Officer
5945	Electronic Equipment PRODUCTION Inspector
5961	Aircraft Electronics Director
5965	Electronics Logistics Officer
5970	Electronic Equipment Military Characteristics Officer
5996	Staff Electronic Material Officer

FIELD: WEAPONS ENGINEERING

NOBC	TITLE
6090	Surface Munitions Project Officer
6205	Guided Missile Control Design Officer
6210	Guided Missile Aerodynamics and Structures Design Officer
6215	Guided Missile Characteristics Officer
6220	Guided Missile Countermeasures Officer
6235	Guided Missile Handling Equipment Officer
6240	Guided Missile Launcher Design Officer
6250	Guided Missile Weapons and Ammunition Officer
6270	Guided Missile Systems Research Officer
6275	Guided Missile Test Officer
6280	Guided Missile Type Project Officer (General)
6281	Guided Missile Type Project Officer (Air-Launched)
6282	Guided Missile Type Project Officer (Ship-Launched)
6283	Guided Missile Type Project Officer (Special Projects)
6284	Guided Missile Type Project Officer (Target Drones)
6305	Armament Proof Officer
6380	Weapons Equipment Project Officer (General)
6381	Weapons Equipment Project Officer (Guns, Mounts, and Launchers)
6470	Weapons Control Systems Project Officer (General)
6471	Weapons Control Systems Project Officer (Air)
6472	Weapons Control Systems Project Officer (Surface)
6473	Weapons Control Systems Project Officer (Subsurface)
6537	Torpedo Weapons Officer
6558	Torpedo Test Officer
6582	Undersea Weapons Project Officer (General)
6583	Undersea Weapons Project Officer (Torpedoes)
6584	Undersea Weapons Project Officer (Mines/Depth Charges)
6585	Undersea Weapons Project Officer (Advanced Undersea Weapons)
6708	Weapons Procurement Officer
6715	Weapons Material Officer (General)
6716	Weapons Material Officer (Nuclear)
6717	Weapons Systems Program Manager
6902	Ballistics Officer
6914	Naval Inspector of Weapons
6917	Nuclear Weapons Research and Development Officer
6920	Weapons Design Officer
6923	Weapons Installation Officer
6930	Naval Weapons Technical Liaison Officer
6936	Weapons Systems Inspection and Survey Officer
6938	Weapons and Ammunition Inspection Officer
6942	Weapons Logistics Officer
6948	Weapons Military Characteristics Officer
6962	Weapons Planning and Progress Officer
6964	Weapons Planning and Control Superintendent
6966	Weapons Plans and Policies Director
6980	Weapons Research Planning Officer
6999	Staff Weapons Material Officer

FIELD: NAVAL ENGINEERING

NOBC	TITLE
7273	Nuclear Power Research Project Officer
7330	Enginering Material Planning and Procurement Officer
7352	Inspector of Naval Material
7936	Ship Construction and Repair Superintendent (General)
7937	Ship Construction and Repa ir Superintendent (Surface Ships)
7938	Ship Construction and Repair Superintendent (Submarines)
7939	Ship Construction and Repair Superintendent (Nuclear)
7955	Naval Engineering Research Director
7959	Naval Engineering Research Project Officer
7968	Nuclear Power Superintendent
7980	Ship Characteristics Officer
7996	Supervisor of Shipbuilding, Conversion, and Repair
7998	Combat Systems Superintendent
7999	Technical Assistant for Weapons

FIELD: AVIATION

NOBC	TITLE
8015	Aircraft Armament Development Officer
8018	Aircraft Production Officer
8035	Aircraft/Guided Missile Engine Project Officer
8076	Type Aircraft Design and Development Officer
8659	Guided Missile Test Officer, Air Launched
8934	Aviation Procurement Contract Officer

FIELD: NAVAL OPERATIONS

NOBC	TITLE
9063	Staff Material Officer

APPENDIX K: LIST OF BILLETS

This list of billets is arranged in ascending NOBC order, by designator and grade. The list of NOBC's is given in Appendix J, and the following abbreviations for grade are used:

I Lieutenant Commander

H Commander

G Captain

The primary subspecialty codes (P-Codes) now assigned to the billets selected are indicated. It is not intended that all the billets be given the P-Code for Systems Acquisition Management (9140P). The P-Codes associated with Systems Acquisition Management are:

91XX Series MATERIAL SUPPORT MANAGEMENT

94XX Series FINANCIAL MANAGEMENT

81XX Series AERONAUTICAL ENGINEERING

82XX Series SHIP ENGINEERING

83XX Series ORDNANCE ENGINEERING

84XX Series SCIENCE

85XX Series OPERATIONS ANALYSIS/SYSTEMS ANALYSIS

The P-Codes should be reserved toindicate type of educational background, and the billets should be indicated WSAM-related in some fashion other than using P-Code, in order to retain flexibility in filling these designated billets.

ACTIVITY NAME	BILLET TITLE	P-CODE	PRI-NOBC	GRADE
ASTSECNAV INSLOG	AST FOR PROCUREMENT	9111P	1476	3100G
HQNAVMATCOMD DC	ASST TO PROG PLAN BR HD	9113S	1476	3100H
HQNAVMATCOMD DC	HD PROCUREMENT POLICY BR	9113P	1476	3100H
HQNAVMATCOMD DC	HD PROCUREMENT PLAN BR	9113P	1476	3100H
HQNAVMATCOMD DC	HD TRAINING & DEVEL BR	9113P	1476	3100H
ASTSECNAV INSLOG	AST TO DIR PROCUREMENT		1476	3100H
NAVELECSYSCOMHQ	SPECAST WEAPONS SYS ACQ	9140P	1476	3100H
NAVSHIPSYSCOMHQ	ASST PM -BUS ADMIN		1476	3100I
NOSC 02	PRCM CONT - SPEC AST TORP	9113P	1480	3100H
NOSC 02	PRCM CONT - DIR AAW SYS	9113P	1480	3100H
NAVSHIPSYSCOMHQ	DIR SUBMARINE BR	9110P	1480	3100H
NOSC 02	PRCM CONT -DIR CONTRACT	9113S	1480	3100I
NOSC 02	PRCM CONT-AST DIR SUR WF	9113P	1480	3100I
SSC & REP GROTON	CONTRACTS		1485	3100G
SSC & REP NPTN VA	CONTRACTS		1485	3100G
SSC & REP PASGLA	CONTRACTS		1485	3100G
NPRO PITTSFIELD	CONTRACT DIVISION OFFICE		1485	3100H
HQNAVMATCOMD DC	DIR SASI PROJ OFFICE		1485	1000G
NPROSUNNYVALE	HD CONTRACTS DIV		1485	3100H
HQNAVMATCOMD DC	MATL/SUBCONT PROC ANALYS	9113P	1485	3100H
HQNAVMATCOMD DC	HD PROC MGMT BR	9113P	1485	3100H
SSC&REP BATH ME	CONTRACT		1485	3100H
SSC&REP QUINCY	CONTRACT	9140P	1485	3100H
NPRO E HART CONN	PRODUCTION		1485	1320I
HQNAVMATCOMD DOC	DIR PROC MGMT DIV	9100P	1485	1510G
NAVSHIPSYSCOMHQ	DIV DIR		1920	3100H
NAVELECSYSCOMHQ	PROG COORD & CONTL		1984	3100I
NAVSUP SUP OPER	FBM/TRIDENT PROJ		1984	3100I
SPCC MECHANICS BG	SUPPLY PLANS - SPECIAL PROJ	9111P	1984	3100I
OPNAV OP 98	HD STRIK WF ACFT		2105	1300G
OPNAV OP 98	HD AIR SUPER SEC		2105	1300H
OPNAV OP 98	HD SPEC MISSION		2105	1510G
HQNAVMATCOMD DC	READINESS ASSURANCE OFF		2105	1510I
OPNAV OP 98	HD AIR ASW BR		2107	1300G
OPNAV OP 98	ASST		2107	1300H
OPNAV OP 98	ASST		2107	1300I

ACTIVITY NAME	BILLET TITLE	P-CODE	PRI-NOBC	GRADE
NAVSHIPSCOMHQ	DIR SHAPM SUPPORT/T&E	8200P	2160	1400G
NAVSHIPENGCEN MD	DEP PM FOR FLEET INTD		2165	1100G
NAVELECSYSCOMHQ DC	DEP PROJ MGR	9140P	2165	1100H
NELSYSCOMWASHDIV	DIR TASS DIV	8450	2165	1100H
NELSYSCOMWASHDIV	DIR MOORED SURV SYS DIV		2165	1100H
NAVSHIPENGCEN MD	ASST PM FOR TECH		2165	1100G
NOSC PM 08	A PROGRMGR FLT SUPPORT MGR		2165	1100G
ASWSYSPROJOFF DC	ASST PROG MGR-DIR SYS ANAL	8510S	2165	1100G
NAVAIRSYSCOMHQ	ADMIN ASST - SASI		2165	1100H
COMOPTEVFOR	ASST PROJ MGR		2165	1100H
COMOPTEVFOR	ASST PROJ MGR		2165	1100H
NWPENGSUPPACT	AST WPNS SYS PROJ COORD		2165	1100I
NOSC ORD 05	AST PROJ MGR-DEP PROJ MGR	8330P	2165	1110G
NOSC PMO 08	AST PROJ MGR-DIR PLAN	8330P	2165	1110G
ASWSYSPROJOFF DC	DIR ADV SYS DIV	8450P	2165	1110G
ASWSYSPROJOFF DC	DIR SYS TEST DIV		2165	1110G
ASWSYSPROJOFF DC	DIR SUB SYS GROUP	9140P	2165	1120G
DIRSTRSYSPROJOFF	HD PLANS PROG BR	8330P	2165	1120G
NOSC PMO 08	A PROJMGR ENGINEERING	8330P	2165	1120H
NOSC PMO 08	A PROJMGR TEST EVAL	8330P	2165	1120H
ASWSYSPROJOFF DC	DIR INSERV SYS DIV		2165	1120H
DIR STRSYSPROJOFF	AST HD PLANS PROG BR		2165	1120H
DIR STRSYSPROJOFF	AST PJMGR-AST HD F/C	8330P	2165	1120H
DIR STRSYSPROJOFF	AST FOR MAINT FLT READ	8300s	2165	1120H
NAVSHIPSYCOMHQ	T & E OFFICER	9140P	2165	1120I
NAVAIRSYSCOMHQ	ASST AIR/SPA RECEW	8240P	2165	1300G
ASWSYSPROJOFF DC	DIR ADV ACFT SYS DIV	8100P	2165	1300G
ASW-14 WHITE OAK	DIR FADAP AND FLT LIA		2165	1300G
WPESACT COM PM 16	ASST PROJ MGR NAV/GEOD		2165	1310H
NAVAIRSYSCOMHQ	ASST ELEC WARFARE	8112P	2165	1310H
NAVAIRSYSCOMHQ	DPTY PROJ MGR NACIS	8112P	2165	1310H
NAVAIRSYSCOMHQ	SASI DPTY PROJ MGR AIR	9140P	2165	1310H
NASC AIR 01	DPTY FOR LAMPS	8100P	2165	1310H
NASC AIR 01	DPTY A-7 ACFT/NAV	8100P	2165	1310H
NASC AIR 01	SYS COORD E-2/ATDS	8100P	2165	1310H
NASC AIR 01	DPTY PROJ MGR S-3A	8100P	2165	1310H
NASC AIR 01	DPTY PROJ MGR FOR REL	8100P	2165	1310H
NASC AIR 01	AST DPTY PROJ MGR A/C	8111P	2165	1310H

ACTIVITY NAME	BILLET TITLE	T CODE	PAY PLAN	
NASC AIR 16	DPTY ADV ENGR F-14	8115P	2165	1310H
NASC AIR 04	AST PROJ MGR A7 APML	9123P	2165	1310H
NASC AIR 04	AST PROJ MGR S3 APML	9123P	2165	1310H
ASWSYSPROJOFF DC	DIR IN-SERV ACFT SYS		2165	1310H
NWPENGSUPPACT	DPTY PROJ MGR HARRIER		2165	1310I
NASC AIR 01	DPTY PM FOR AVIA EQP	8111P	2165	1310I
NASC AIR 01	DPTY FOR SH-3	8100P	2165	1310I
NASC AIR 01	AVIO/ARM SIM/FUNC INT OF	8111P	2165	1310I
NASC AIR 01	DPTY AVIONICS & ARM	8114P	2165	1310I
NASC AIR 04	AST PROJ MGR E2 APML	9123P	2165	1310I
NASC AIR 05	ASST PROJ MGR SIDEWINDER	9140P	2165	1310I
NASC AIR 04	AST PROJ MGR E2 APML	9123P	2165	1311H
SES PROJ OFF DC	DEP PROJECT MANAGER PM 17	8200D	2165	1400G
NAVSHIPSYSCOMHQ	DIR SHIP SYS MGMT DIV	8200P	2165	1400G
NAVSHIPSYSCOMHQ	TECHNICAL DIRECTOR	8200P	2165	1400G
NAVSHIPSYSCOMHQ	DEP PROJ MGR	8200P	2165	1400G
ASWSYSPROJOFF DC	DIR SURF SHIP SYS GRP	9140P	2165	1400G
ASWSYSPROJOFF DC	DIR ADV SYS DIV	8450P	2165	1400G
DIR STRSYSPROJOFF	HD NAVIGATION BR	8200P 2	2165	1400G
NAVSHIPSYSCOMHQ	ASST PM	8200P	2165	1400H
NAVSHIPSYSCOMHQ	DEPTY PROJ MRG		2165	1400H
NAVSHIPSYSCOMHQ	AST PM -CPIC	8210P	2165	1400H
NAVSHIPSYSCOMHQ	AST PROJ MGR-DD ASW CONV	8210P	2165	1400H
NAVSHIPSYSCOMHQ	ILS DIR	8230P	2165	1400H
NAVSHIPSYSCOMHQ	AST PM FOR MIS	8210P	2165	1400H
NAVSHIPSYSCOMHQ	DIR PROC/PROCURE DIV	8230P	2165	1400H
NAVSHIPSYSCOMHQ	AST PM FOR DESIGN COORD	8210P	2165	1400H
NAVSHIPSYSCOMHQ	AST PROJ MGR DLG MOD	8210P	2165	1400H
NAVSHIPSYSCOMHQ	AST FOR TECH MGT	8210P	2165	1400H
NAVSHIPSYSCOMHQ	AST PM	8210P	2165	1400H
NAVSHIPSYSCOMHQ	AST PM HYDROFOILS	8210P	2165	1400H
NAVSHIPSYSCOMHQ	AST PM		2165	1400H
NAVSHIPSYSCOMHQ	ASST PM-CVAN 68/69	8200P	2165	1400H
NAVSHIPSYSCOMHQ	AST PM-MID 70 SSN	8210P	2165	1400H
NAVSHIPSYSCOMHQ	AST PM TEMP		2165	1400H
NELSYSCOMWASHDIV	AST DIR FIXED SYS IMPROV		2165	1400H

ACTIVITY NAME	BILLET TITLE	P-CODE	PRI-NOBC	GRADE
NAVSHIPENGCEN MD	APM PLANS/PROGRAMS		2165	1400I
NAVAIRSYSCOMHQ	QUICK REACT CAP COORD	8240P	2165	1400I
NAVSHIPSYSCOMHQ	PROJ SUPVR-SUB REWSON	8240P	2165	1400I
SSC&REP PASGLA	ASST DD-963 PROJ	8210P	2165	1400I
WPESACI COM PM16	ASST PM SYS APPLICATIONS		2165	1510G
NASC AIR 01	DPTY FOR RECON A/C	8112P	2165	1510G
WPESACI COM PM 16	ASST PROJ MGR ADV SYS		2165	1510H
WPESACT COM PM 16	ASST PROJ MGR FLTSATCOMS		2165	1510H
NASC-AIR-01	AST DPTY FOR SIM & INTEG	8111P	2165	1510H
NASC AIR 01	DPTY FOR AIR VEHICLES	8100P	2165	1510H
NASC AIR 01	AST - P-3 DERIVATIVES	8100P	2165	1510H
NASC AIR 01	DPTY EA-6	8112P	2165	1510H
NASC AIR 04	AST PROJ MGR F8 A/C	9123P	2165	1510H
NASC AIR 01	HARPOON READ ASSUR OFF	9123P	2165	1520H
NASC AIR 01	SPEC AST FLD LIA & INSTA	9131P	2165	1520H
NASC AIR 01	DPTY PM FOR AVIA PERS	9131P	2165	1520I
NAVSHIPENGCEN MD	SURF PROJ SUPVR ADDU TO	8220P	2165	1610I
NOSC ORD 05	AST PROJ MGR-NAVORD HARP	8330P	2165	1700H
NAVSHIPENGCEN MD	ASST FOR BUSINESS ADMIN	9411P	2165	3100G
NAVSHIPENGCEN MD	DIR FOR INTEGRATED LOGIS		2165	3100H
NOSC PMO 08	AST PROJ MGR-AST BUS ADM	9111P	2165	3100H
NOSC PMO 08	A PROJMGR-PL&RESOURCE MG	9411P	2165	3100H
NPRO DALLAS TEX	ASST FOR BUSINESS ADMIN	9111P	2165	3100I
NAVSHIPSYSCOMHQ	ASST FOR SUPPLY SPT		2165	3100I
NASC AIR 04	AST PROJ MGR WPNS APML	9123S	2165	6700I
SPEC SUPP SERV	ASST PROJ OFFICER		2170	1000H
NWPENGSUPPACT DC	EW SYS PROGRAMS OFF		2170	1100H
NWPENGSUPPACT DC	TACT SUR SYS PROG COORD		2170	1100H
NAVSHIPSYSCOMHQ	OCEAN ENG PROJ		2170	1100H
SEASPARPROJ SUPP	DESIG PROJ SUP-US NAT OF		2170	1100H
NAVSPAPROJACT DC	PROJECT OFFICER		2170	1100I
SPAPROJDET LUSA	PROJECT OFFICER		2170	1100I
NAVELECSTYSCOMHQ	SANGUINE PROJECT	8240P	2170	1100I
NELSYSCOMWASHDIV	DEP DIR OPERATIONS DIV	9140P	2170	1100I
NELSYSCOMWASHDIV	DEP DIR OPERATIONS DIV	9140P	2170	1100I
NPRO SSPUTRPGNCK	SSPO TECH REP		2170	1100H

ACTIVITY NAME	BILLET TITLE	P-CODE	PRI-NOBC	GRADE
ASWSYSPROJOFF DC	DIR SURVEIL EVAL DIV	8450P	2170	1110H
ASWSYSPROJOFF DC	DIR IN-SERV SYS DIV	8330P	2170	1110H
DIR SIRSYSPROJOF	DESIG PJ SUP-AST TECH PL	8310P	2170	1110H
NPRU SSPUTRPGNCK	SSPO PROJECT OFF		2170	1110I
ASWSYSPROJOFF DC	DESIG PROJ SUP-COMD & CO	9220P	2170	1110I
NAVSHIPENGCEN MD	COMBAT SUB SYSTEM	9140P	2170	1120H
NAVELECSYSCOMHQ	AST PM-HYDRUS	8810P	2170	1120H
NAVSHIPSYSCOMHQ	ASST PM R&D	9140P	2170	1120H
NAVSHIPSYSCOMHQ	ASST PM SSN688 CL	8210P	2170	1120H
ASWSYSPROJOFF DC	SS/SSN SYS MGR		2170	1120H
DIR STRSYSPROJOF	HD PLANS & PROG COORD SE	9400S	2170	1120H
DIR STRSYSPROJOF	AST HD TRAINING SYS BR	8300S	2170	1120H
DIR STRSYSPROJOF	AST HD NAVIGATION BR	9140P	2170	1120H
NAVSHIPSYSCOMHQ	OCEAN ENG PROJ		2170	1120I
NAVSHIPSYSCOMHQ	FLT REQ PROJ	9140P	2170	1120I
DIR STRSYSPROJOF	SP AST FOR ADV PLAN	8300S	2170	1120I
DIR STRSYSPROJOF	HD TRAINING EVAL & MAN S	8300S	2170	1120I
DIR STRSYSPROJOF	DLS PJ SUP-AST TO TECH P	8510P	2170	1120I
DIR STRSYSPROJOF	FLT LIAISON OFF	8300S	2170	1120I
DIR STRSYSPROJOF	DESIG PJ SUP-PROJ OFF SS	8240P	2170	1120I
DIR STRSYSPROJOF	MANNING PROJ OFF	8300S	2170	1120I
DIR STRSYSPROJOF	FLT LOGISTICS COORD OFF	8300S	2170	1120I
DIR STRSYSPROJOF	TRAINING PROJ OFF	8300S	2170	1120I
TURPSTA KEYPORT	MK48 TORP PROJ	8450P	2170	1120I
NASC AIR 01	CONFIG MGT OFF	9131P	2170	1300G
ARMAVSYSCOM STLO	LIAOFF-HEAVY LIFT HELD D		2170	1310H
NWPENGSUPPACT DC	TACT A/S SYS PROCRES COOR		2170	1310H
NASC AIR 05	PROJ SUPP OFF SPAR/AWG-1	8240P	2170	1310H
NAVELECSYSCOMMHQ	AST PM-TACAMO	9140P	2170	1310H
NOSC PMO 08	DESIG PROJ SUP-AST FOR T	8110S	2170	1310H
ASWSYSPROJOFF	ACFT PLATFORMS MGR		2170	1310H
ASWSYSPROJOFF DC	ACFT SUBSYSTEMS MGR		2170	1310H
NAVSPAPROJACT DC	PROJECT OFFICER		2170	1310I
NASC AIR 01	F4 CONFIG CONTROL OFF	8100P	2170	1310I
NASC AIR 01	TRAINING OFF	8100P	2170	1310I
ASWSYPROJOFF DC	ACFT PLATFORMS MGR	8112P	2170	1310I

ACTIVITY NAME	BILLET TITLE	P-CODE	PRI-NOBC	GRADE
NAVSHIPSYSCOMHQ	PROJ MGR-REWSO N/TEMP	8200P	2170	1400G
NAVSHIPSYSCOMHQ	DIR SHIP SYS MGMT DIV	8200P	2170	1400G
NAVELECSYSCOMHQ	SPECOM PROJECT	8241P	2170	1400H
NAVELECSYSCOMHQ	SATCOM INSTALL PROG MGR	8240P	2170	1400H
NAVSHIPSYSCOMHQ	ASST PM AUX SHIPS		2170	1400H
ASWSYSPROJOFF DC	SSN PLANS/SYS ENG	8450P	2170	1400H
DIR STRSYSPROJOF	HD EQPT UNIT	8240P	2170	1400H
NAVSHIPENGCEN MD	PROJECT OFFICER		2170	1400I
NAVELECSYSCOMHQ	SPECOM PROJECT	8240P	2170	1400I
NAVELECSYSCOMHQ	TECH ADVISOR	8200D	2170	1400I
NAVELECSYSCOMHQ	OSIS PROJECT	9220P	2170	1400I
NOSC PMO 08	DESPJSP-SRCH RADR TECHDI		2170	1400I
ASWSYSPROJOFF DC	DESIG PROJ SUP-SURF SHIP	8240P	2170	1400I
ASWSYSPROJOFF DC	DESIG PROJ SUP-FIXED PLA	8450P	2170	1400I
DIR STRSYSPROJOF	DESIG PJ SUP-RD LOG UNIT	9140P	2170	1400I
SSC&REP PASGLA	ASST DD-963 PROJ		2170	1400I
NAVSHIPSYSCOMHQ	AST PM-AIR SYSTEMS	8100P	2170	1510H
NAVSPAPROJACT DC	PROJECT OFFICER		2170	1510I
NASC AIR 16	AST OPTV PROJECT MGR ADV EN	8100P	2170	1510I
ASWSYSPROJOFFDC	DIR WEA SYS EVAL DIV	8330P	2170	1700H
DIR STRSYSPROJOF	DES PJ SUP-AST FOR SSBN	8450P	2170	1700H
NOSC PMO 08	D PROJ SUP-MPN SYSTEM OF	8450P	2170	1700I
NFLSYSCOMWASHDIV	AST DIR PLANS&PROGS DIV		2170	3100H
NAVSHIPSYSCOMHQ	PROJ AST-LOGISTICS SUPPT	9111P	2170	3100I
SPCC MECHANICSBG	DESIG PROJ SUP-SHIPS PRO	9140P	2170	3100I
NAVELECSYSCOMHQ	SANGUINE PROJECT MANAGER	8900P	2170	5100G
PAC ELOPTEVFUSTF	PREOP TST&EVAL ASST TACT		2180	1100J
WEAPEVALFAC AFB	SUR-SUB/SUR WEAPONS		2180	1110I
PAC ELOPTEVFOSTF	PREOP TST&EVAL/ASST FOR		2180	1110I
WEAPEVALFAC AFB	SUR-SUB/SUR WEAPONS		2180	1120I
WEAPEVAL FAC AFB	PREUP TEST & EVAL AC PRO	8113S	2180	1311H
VX 5	PROJ DIRECTOR	8114P	2180	1311H
COMOPTEVFOR	OP TEST & EVAL/AST ENG/D		2181	1100I

BILLET TITLE	P-CODE	PRI-NOBC	GRADE
COMOPTEVFOR	OP TEST & EVAL/HD SHP/SRF		2181	1110H
COMOPTEVFOR	OP TEST & EVAL/RADAR SYS T	8240P	2181	1110H
COMOPTEVFOR	OP TEST & EVAL/HEAD USW SN		2181	1110H
PAC ELOPTEVFUSTF	OP TEST & EVAL/PAC SURFACE		2181	1110H
COMOPTEVFOR	OP TEST & EVAL/AST FOR GU	8300S	2181	1110I
COMOPTEVFOR	OP TEST & EVAL/SRF SNR SYS	8440P	2181	1110I
COMOPTEVFOR	OP TEST & EVAL/SRF SNR SY	8240P	2181	1110I
COMOPTEVFOR	OP TEST & EVAL/AST EL EN	8240P	2181	1110I
COMOPTEVFOR	OP TEST & EVAL/AST SUB SNR		2181	1110I
COMOPTEVFOR	OP TEST & EVAL/WPN SYS T		2181	1110I
PAC ELOPTEVFOSTF	OP TEST & EVAL/CLOSE IN WE		2181	1110I
PAC ELOPTEVFOSTF	OP TEST & EVAL/AST SURF M		2181	1110I
PAC ELOPTEVFOSTF	OP TEST & EVAL/RADAR/ECM S	8240P	2181	1110I
PAC ELOPTEVFOSTF	OP TEST & EVAL/SURF MISSLE		2181	1110I
COMOPTEVFOR	OP TEST & EVAL/AST SUB SNR	8459P	2181	1120H
COMOPTEVFOR	OP TEST & EVAL/HEAD USW W	8450P	2181	1120H
COMOPTEVFOR	OP TEST & EVAL/AST WPNS		2181	1120I
COMOPTEVFOR	OP TEST & EVAL/SUB SNR SYS	8240P	2181	1120I
COMOPTEVFOR	OP TEST & EVAL/SUB SNR SYS	8440P	2181	1120I
COMOPTEVFOR	OP TEST & EVAL/AST COM S		2181	1120I
COMOPTEVFOR	OP TEST & EVAL/HELO EVAL		2181	1310H
COMOPTEVFOR	OP TEST & EVAL/COMM SYS	8810P	2181	1310H
COMOPTEVFOR	OP TEST & EVAL/AIR AEW SYS		2181	1310H
COMOPTEVFOR	OP TEST & EVAL/AIR ECM SYS		2181	1310H
COMOPTEVFOR	OP TEST & EVAL/VF WPN SYS	8111P	2181	1310H
COMOPTEVFOR	OP TEST & EVAL/AST AIR ASW	8112P	2181	1310H
COMOPTEVFOR	OP TEST & EVAL/TACT DATA S	9200S	2181	1310H
COMOPTEVFOR	OP TEST & EVAL/HEAD AIR AS	8100P	2181	1310H
COMOPTEVFOR	OP TEST & EVAL/VAAR WPNS	8112P	2181	1310H
COMOPTEVFOR	OP TEST & EVAL/AST AIR ASW		2181	1310H
COMOPTEVFOR	OP TEST & EVAL/AST AIR ACM		2181	1310I
COMOPTEVFOR	OP TEST & EVAL/AST VF WPN		2181	1310I
COMOPTEVFOR	OP TEST & EVAL/AST AIR ASW		2181	1310I
COMOPTEVFOR	OP TEST & EVAL/AST RADAR S	8240P	2181	1310I
COMOPTEVFOR	OP TEST & EVAL/AST VA WPN		2181	1310I
COMOPTEVFOR	OP TEST & EVAL/AST VA WPN	8114P	2181	1310I
COMOPTEVFOR	OP TEST & EVAL/AST RADAR S	8112P	2181	1310I

ACTIVITY NAME	BILLET TITLE	P-CODE	PRI-NOBC	GRADE
COMOPTEVFOR	OP TEST & EVAL/AST COMM	8810P	2181	1310I
COMOPTEVFOR	OP TEST & EVAL/AST VF WPN	8114P	2181	1310I
PAC ELOPTEVFOSTF	OP TEST & EVAL/AIR ASW SYS		2181	1310I
PAC ELOPTEVFOSTF	OP TEST & EVAL/PAC AIR WAR		2181	1310I
COMOPTEVFOR	OP TEST & EVAL/EW TEST O		2181	1320H
COMOPTEVFOR	OP TEST & EVAL/EW TEST P		2181	1320H
COMOPTEVFOR	OP TEST & EVAL/AST AR AEW	8240S	2181	1230I
COMOPTEVFOR	OP TEST & EVAL/AST ECM S	8112P	2181	1320I
COMOPTEVFOR	OP TEST & EVAL/AST COMM	8112P	2181	1320I
COMOPTEVFOR	OP TEST & EVAL/AST AR AE	8240S	2181	1320I
COMOPTEVFOR	OP TEST & EVAL/HD SRF GN	8300P	2181	1700H
COMOPTEVFOR	OP TEST & EVAL/HD SURF MSL	8300P	2181	1700H
COMOPTEVFOR	DEPUTY DIRECTOR/AUDU CNO		2190	1000G
OPNAV OP	DIRECTOR TEST & EVAL		2190	1000G
OPNAV OP	HD SURFACE PROJ BR		2190	1100H
OSD	PRO MGR OPS NAL & NAV A	8000P	2190	1100H
UWATSYCENDT CONN	LIAISON R&D		2190	1100I
COMOPTEVFOR	LIAISON R&D/ADDU CNO OP		2190	1100I
OPNAV OP	HD UNDERSEA & STRAT		2190	1120H
COMOPTEVFOR	LIAISON R&D/ADDU CNO OP		2190	1120I
OSD	OPTEST & EVAL OFF		2190	1300G
OPNAV OP	HD AIR PROJ BR		2190	1310H
OPNAVOP	HD RANGES/OT&E RESO		2190	1310H
COMOPTEVFOR	LIAISON R&D/ADDU CNO OP		2190	1310I
COMOPTEVFOR	LIAISON R&D/ADDU CNO OP		2190	1310I
NRSCHLAB ONR DC	LIAISON R&D/PROGRAMS	8430P	2190	1311I
MISLCEN PT MUGU	E/W OPS DIRECTOR		5904	1310H
DCA HQ/DCS	PROJECT MGR 76/01		5904	1400G
NAVELECSYSCOMHQ	DIR PROG MGT DIV NOTE 1	8240P	5913	1400G
NAVSHIPENGCEN MD	AST FOR AUX SHIP PROJ	8241P	5913	1400H
NAVELECSYSCOMHQ	DIR SYS EFF ENG DIV	8112P	5913	1510H
OPNAV OP	ASST TACT DATA SY		5917	1100H
NAVSHIPENGCEN MD	PROJ COORD	8240P	5917	1110H
NAVSHIPENGCEN MD	PROJ COORD	8240P	5917	1110I
NAVELECSYSCOMHQ	SYS INTEGRATION-SUB	8240P	5917	1120I
NAVELECSYSCOMHQ	SYS INTEGRATION	8112P	5917	1310I

ACTIVITY NAME	BILLET TITLE	P-CODE	PRI-NOBC	GRADE
NAVSHIPSYSCOMHQ	PROJ MGR	8240P	5917	1400G
NAVELECSYSCOMHQ	SHIP ELEX SYS PROJ OFF	8240P	5917	1400H
NAVELECSYSCOMHQ	DIR UNDERSEA SURVEIL DIV	8200D	5917	1400H
NAVSHIPENGCEN MD	PROJ COORD	8240P	5917	1400I
NAVSHIPENGCEN MD	COMBAT SYS PROJ OFF	8241P	5917	1400I
NAVELECSYSCOMHQ	SYS INTEGRATION	8240P	5917	1400I
NAVELECSYSCOMHQ	SYS INTEGRATION	8112P	5917	1510I
NAVELECSYSCOMHQ	DIR ILS DIV	8240S	5965	1000H
NAVELECSYSCOMHQ	COMM PROGRAM SUPPORT		5965	1100I
NAVELECSYSCOMHQ	FLT LIAISON OFF	8240P	5970	1400H
WEAPLAB DAHLGREN	PROJECT		6090	1310I
DIR STRSYSPROJOF	AST HD LAUNCH HNDLNG BR	9140P	6270	1120H
NPRO SUNNYVALE	LAUNCHING SYSTEMS OFFICE		6270	1120I
DIR STRSYSPROJOF	AST HD GUID SEC	8330P	6270	1120I
DIR STRSYSPROJOF	HD F/C & GUID BR	8310P	6270	1700G
SHPWPSYENGS PTHU	FLT PROJ OFF-TERRIER	8330P	6275	1110H
DIR STRSYSPROJOF	HD TEST OP SEC		6275	1110H
SHPWPSYENGS PTHU	FLT PROJ OFF-TALUS	8300S	6275	1110I
SHPWPSYENGS PTHU	FLT PROJ OFF-TERRIER	8330P	6275	1110I
SHPWPSYENGS PTHU	FLT PROJ OFF-TARTAR	8300S	6275	1110I
DIR STRSYSPROJOF	HD TEST & OPER BR	8330P	6275	1120G
DIR STRSYSPROJOF	GM TEST-AST FBM WPN SYS	8300S	6275	1120G
DIR STRSYSPROJOF	GM TEST-DEP AST FBM WPN	8300S	6275	1120H
NASC AIR 051	DIR EVAL SYS DIV	8100P	6280	1510G
NASC AIR 051	HD MSL GUID & CONTROL BR	8112P	6280	1510H
ORDMSL TFAC N M	TEST OFFICER	8310P	6280	1700H
NASC AIR 05	AST PROJ MGR CONDOR	8112P	6281	1310H
NASC AIR 05	AST PROJ MGR SPARROW WPN	8112P	6281	1310H
NASC AIR 05	AST PROJ MGR WALLEYE	8112P	6281	1310I
OPNAV OP	ASST FOR CLOSE AI		6281	1320H
NASC AIR 05	AST PROJ MGR HARPOON	8100P	6281	1510H
NASC AIR 05	AST PROJ MGR ARM	8112P	6281	1510H
NASC AIR 05	AST PROJ MGR PHOENIX WPN	8114P	6281	1510H
NASC AIR 05	PROJ SUP OFF STANDARD AR		6281	1520I
OPNAV OP	HD COMBAT SYS SEC		6282	1100G

ACTIVITY NAME	BILLET TITLE	P-CODE	PRI-NOBC	GRADE
OPNAV OP	AST MISSILE SYS		6282	1100I
NOSC ORD 05	GM PJ SHP-LNCH-DIR GM&AM	8310P	6282	1110G
MISLCEN PT MUGU	SHIPS MISSILE SYS PROG	8300S	6282	1110H
SHPWPSYENGS PTHU	GM PJ SHP-LNCH/HD AEGIS		6282	1110H
SHPWPSYENGS PTHU	HD POINT DEFENSE	8330P	6282	1110H
SHPWPSYENGS PTHU	HEAD TALOS	8330P	6282	1110H
NOSC PMO 08	GM PJ SHP-LNCH-TEST/EVAL	8330P	6282	1110I
NOSC PMO 08	GM PJ SHP-LNCH-COM&CONTR	8241P	6282	1110I
SHPWPSYENGS PTHU	HEAD TERRIER	8330P	6282	1700H
SHPWPSYENGS PTHU	HEAD TARTAR	8330P	6282	1700H
DIR STRSYSPROJOF	TECH PLANS OFF	8300P	6283	1120G
DIR STRSYSPROJOF	AST HD MISSILE BR	8140P	6283	1120H
DIR STRSYSPROJOF	AST FOR F/C &GUID	8330P	6470	1120H
AVIONFAC INDNPLS	PROJECT/PROGRAM MGR	8112P	6471	1310H
AVIONFAC INDNPLS	SR PROJECT	8112P	6471	1510H
NOSC ORD 05	USEA PROJ MIN-PROJ OFF M		6584	6150I
SPCC MECHANICSBG	WEP PROCUREMENT-TECH ASS		6708	1100H
DIR STRSYSPROJOF	HD PROD Q/C ASSUR & FLT	9140P	6708	1700H
NASPASYSACT LOSA	SENIOR PROJECT OFF	8112P	6717	1000H
OPNAV OP	OP-03H11 ASST FOR MGMT		6717	1100H
NOSC ORD 05	PGM MG WEP SY-DIR USW SY	8330P	6717	1110G
NOSC ORD 05	PGM MG WEP SYS-DIR SURWP	8300P	6717	1110G
NAVSHIPSYSCOMHQ	COMBAT SYS COORD	8240P	6717	1120I
NASC AIR 01	DIR PROJ COORD DIV	8100P	6717	1300G
OPNAV OP	OP-03H12 ASST FOR SHIPS		6717	1300G
NASPASYSACT LUSA	PROGRAM DIRECTOR	8112P	6717	1300G
OPNAV OP	OP-03H21 AST FOR MGMT &		6717	1300H
OPNAV OP	OP-03H2 PROG MGR LAMPS		6717	1300H
NALCNAF WARMINST	PROJECT OFFICER	8112P	6717	1310H
OPNAV OP	OP-03H22 ASST FOR SHIPS		6717	1310H
OPNAV OP	ASW HELLO/LAMPS		6717	1310H
NADCNAF WARMINST	ASW PROGRAMS OFF	8112P	6717	1310I
NADCNAF WARMINST	PROJECT OFFICER		6717	1310I
NPRO STRATFORD	WEAPON SYSTEM MANAGER		6717	1310I
NADCNAF WARMINST	PROJECT OFFICER	8100P	6717	1320I

ACTIVITY NAME	BILLET TITLE	P-CODE	PRI-NOBC	GRADE
NADCNAF WARMINST	PROJECT OFFICER	8112P	6717	1510H
NASPASYSACT LUSA	PROJECT OFFICER	8117P	6717	1510H
NADCNAF WARMINST	PROJECT OFFICER	8112P	6717	1510I
NADCNAF WARMINST	PROJECT OFFICER	8112P	6717	1510I
NADCNAF WARMINST	PROJECT OFFICER	8114P	6717	1510I
NATC NAS PAXRIV	PROJECT COORDINATOR	8112P	6717	1510I
NPRO DALLAS TEX	PROGRAMS OFFICER	8100P	6717	1510I
NASPASYSACT LUSA	PROJECT OFFICER	8117P	6717	1510I
NASPASYSACT LUSA	PROJECT OFFICER	8117P	6717	1510I
NOSC ORD 05	DEP DIR SURF WPNS SYS AC	8330P	6717	1700G
NPRO GREAT NECK	NAVPLANTREP	8100P	6914	1100H
NPRO BALTIMORE	PROJ MGR-SURFACE ELECT	8240P	6914	1100I
NPRO PITTSFIELD	NAVPLANTREP/SPO	8300P	6914	1110G
NPRO SIL SPG MD	NAVPLANTREP	8300P	6914	1110G
NPRO GREAT NECK	ASST PLANT REP	8300S	6914	1110H
NPRO POMONA CAL	ASST NAVPLANTREPO	8300S	6914	1110H
TECREP MOORES NJ	AEGIS TECH REP	8300P	6914	1110H
NPRO ANAHEIM CAL	TECHREP AUTONETICS	8240P	6914	1110H
NPRO SIL SPG MD	CONTRACTOR PROJECT COOR	8300S	6914	1110I
NPRO BALTIMORE	PROJ MGR - DEEP SUBMERGE		6914	1120H
NPRO BALTIMORE	ASST NAVPLANTREP		6914	1310H
NPRO BETHPAGE NY	AST NAVPLANTREP	8100P	6914	1310H
NPRO DALLAS TEX	ASST NAVPLANT REP	8100P	6914	1310H
NPRO E HART CONN	AST NAV PLANT REP		6914	1310H
NPRO LONGEACH CAL	AST NAV PLANT REP		6914	1310H
NPRO STRATFORD	AST NAV PLANT REP		6914	1310I
NPRO BURBANK CAL	ASST NAV PLANT REP		6914	1310I
NPRO DOTHAN ALA	AST NAVPLANTREP	6914	1310I	
BNPRO W PALM BCH	AST NAVPLANT BR REP		6914	1310I
NPRO BALTIMORE	NAVPLANTREP	8100P	6914	1410G
NPRO BETHPAGE NY	NAVPLANTREP	8100P	6914	1510G
NPRO BURBANK CAL	NAV PLANT REP	8100P	6914	1510G
NPRO COLUMBUS OH	NAVPLANT REP	8100P	6914	1510G
NPRO DALLAS TEX	NAVPLANTREP	8100P	6914	1510G

ACTIVITY NAME	BILLET TITLE	P-CODE	PRI-NOBC	GRADE
NPRO E HART CONN	NAV PLANT REP	8100P	6914	1510G
NPRO STRATFORD	NAV PLANT REP		6914	1510G
NPRO DOTHAN ALA	NAVPLANTREP	8100P	6914	1510H
BNPRO W PALM BCH	NAVPLANT BR REP	8100P	6914	1510H
NPRO LONGBCH CAL	NAV PLANT REP		6914	1510H
NPRO BALTIMORE	PROJ MGR - AVIONICS	8112P	6914	1510I
NPRO AKRON OHIO	NAV INSP WEP-SPEC ASST	8330P	6914	1700I
NPRO POMONA CAL	QUALITY OFF	8330P	6914	1700I
NPRO LONGBCH CAL	QUAL DIV DIR		6914	6850I
DIR STRSYSPROJOF	HD REENTRY BODY SEC	8300P	6917	1700H
DIR STRSYSPROJOF	PROJ OFF REB SEC	8310P	6917	1700I
DIR STRSYSPROJOF	PROJ OFF REB SEC	8310P	6917	1700I
ORDLAB WHIEOAK	WEPS DEV PROG	8330P	6920	1110H
NAVWEAPCEN CHILK	MIL ASST POINT DEFENSE	8240P	6920	1110I
NAVWEAPCEN CHILK	MIL ASST WEAPONS ENG		6920	1310I
TECREPNPRO S LOU	NAVINSPWEP/HARPOON		6930	1100I
DSMGMTSCH FIBELV	MGT RES OFFICER 06/05	8140P	6980	1000H
COMDESDEVGRU	WEPS PROJECT	8300S	6980	1110I
OSD	R&D PROJ MGR OVLRSEAS DE	8510P	6982	1100H
NPRO PITTSFIELD	ASST NAVPLANTREP/SPO MIT	8330P	6982	1110I
NSYD NORFOLK	SHIP SUPT		7936	6300I
NSYD MARE IS	SHIP SUPT	8230P	7937	1100I
NSYD HUNTERS PT	SHIP SUPT		7937	1110I
NSYD PUGET SND	SHIP SUPT		7938	1120I
NAVSHIPENGCEN MD	PROJ COORD		7974	1110H
NAVSHIPENGCEN MD	TECH DIR FOR PF ADDU TO	8210P	7974	1400H
NAVSHIPENGCEN MD	ASST FOR DD PROJ	8210P	7974	1400H
NAVSHIPENGCEN MD	PROJ COORD	8210P	7974	1400H
NAVSHIPENGCEN MD	ASST FOR SSN PROJ	8210P	7974	1400H
OPNAV OP	OP-36K ASST LHA COORD		7980	1100G
OPNAV OP	OP-363C ASST		7980	1100H
OPNAV OP	OP-36K1 ASST		7980	1100I
SSC&REP PASGLA	RESSUPSHIP CULVER CITY		7996	1400H
SSC&REP PASGLA	RESSUPSHIP CULVER CITY		7996	1400H
SSC&REP BATH ME	AST FOR WEAPONS		7998	1110I
SSC&REP NPIN VA	OIC TEST & TRIALS TEAM A	9140P	7999	1100I

ACTIVITY TITLE	BILLET TITLE	P CODE	PRI NOBS	GRADE
NASC AIR 04	A/C ARM DEV F14 APML		8015	1310H
NPRO BURBANK CAL	HEAD S-3A RILSD		8018	1520I
NASC AIR 051	PROJ COORD	8115P	8035	1310I
NASC AIR 051	PROJ OFF	8115P	8035	1310I
NASC AIR 051	PROJ OFF	8115P	8035	1310I
NASC AIR 051	PROJ COORD SHAFT ENG	8115P	8035	1310I
NWPENGSUPPACT DC	ENG PROJ COORD		8035	1510H
NASC AIR 03	AERO & STRUCT R&D PROJ O	8100P	8035	1510H
NASC AIR 051	SR PROJ COORD SHAFT ENG		8035	1510I
NAIC NAS PAXRIV	HD VP BR	8113S	8076	1310H
NATC NAS PACRIV	AIRCRAFT PROJECT COORD	8113S	8076	1310H
NASC AIR 05	AST PROJ COORD LAMPS/SAR	8100P	8076	1310H
NASC AIR 05	PROJ OFF VA-L	8100P	8076	1310H
NATC NAS PAXRIV	HD V/STOL & ROTARY BR	8113S	8076	1310I
NATC NAS PAXRIV	HD VA BR	8113S	8076	1310I
NATC NAS PAXRIV	HD VF BRANCH	8113S	8076	1310I
NASC AIR 05	PROJ OFF VP-L	8100P	8076	1310I
NASC AIR 05	PROJ OFF AEW	8112P	8076	1310I
NASC AIR 05	PROJ OFF VS	8100P	8076	1310I
NASC AIR 05	AST PROJ OFF VAL A-7	8100P	8076	1310I
NASC AIR 05	PROJ OFF VS	8100P	8076	1320I
NASC AIR 05	AST PROJ MGR AEW	8112P	8076	1510H
NASC AIR 05	AST PROJ MGR VS	8100P	8076	1510H
NASC AIR 05	AST PROJ MGR VF	8100P	8076	1510H
NASC AIR 05	AST PROJ MGR VPL	8100P	8076	1510H
NASC AIR 05	PROJ OFF LAMPS	8100P	8076	1510I
NASC AIR 05	PROJ OFF VF - F-14	8100P	8076	1510I
NASC AIR 051	ASST PR COORD/PR OFF TRIM		8076	1510I
MISLCEN PT MUGU	PHOENIX/F-14 BRANCH HEAD		8588	1510I

APPENDIX L: GUIDANCE BILLET LIST

This appendix contains six sample "Guidance Billet Lists" based on the billet list given in Appendix K. These Guidance Lists are divided according to Warfare Specialty and Designator. The list contains typical billets to which Weapon Systems Acquisition Management sub-specialists should be assigned. Space precludes including each billet in a list intended to be used for individual career planning.

GUIDANCE BILLET LIST (SURFACE UNRESTRICTED LINE OFFICERS)

BILLET TYPE	LOCATION
LIEUTENANT COMMANDER	
ASST PROJ MGR LOGISTICS	NMAT PM, NSHIPS, NLEX, NORD
ASST PROJ MGR TEST EVALUATION	NMAT PM, NSHIPS, NLEX, NORD
PROJECT MANAGER	NMAT PM, DEVEL CENTER, SSPO NPRO, SUPSHIPS
DEVELOPMENT COORDINATOR	OPNAV
ASST PROGRAM COORDINATOR	OPNAV, NAVSEC
FLEET LIAISON R & D	RESEARCH ACTIVITIES, OPTEVFOR
PROJ OFF TEST EVAL SHIPS SYSTEMS	OPTEVFOR, PACELOPTEVFOR
PROJ OFF TEST EVAL WPN SYSTEMS	OPTEVFOR, PACELOPTEVFOR
PROJ OFF TEST EVAL EW SYSTEMS	OPTEVFOR, PACELOPTEVFOR
PROJECT OFFICER	DD DEV GRP, MISSILE CENTERS, NORD, SUPSHIPS
MILITARY ASSISTANT	NAVY LAB
ASSISTANT NPRO	FIELD (PAMONA, ETC.)
TRAINING OFFICER	SUPSHIPS
WEAPONS INSPECTOR	TECH REPRESENTATIVE
COMMUNICATIONS PROG SUPPORT	NLEX
COMMANDER	
ASST PROJ MGR LOGISTICS	NMAT PM, NSHIPS, NLEX, NORD
ASST PROJ MGR TEST EVALUATION	NMAT PM, NSHIPS, NLEX, NORD
ASST PROJ MGR PLAN AND PROGRAMS	NMAT PM, NSHIPS, NLEX, NORD, SSPO
DEPUTY PROJECT MANAGER	NMAT PM, NSHIPS, NLEX, NORD
PROJECT DIVISION DIRECTOR	NMAT PM, NSHIPS, NLEX, NORD
PROJ OFF EW SYSTEM	NWPENGSUPACT
PROJECT COORDINATOR	NAVSEC
ASST PROJECT COORDINATOR	OPNAV
WEAPONS PROCUREMENT AST	SPCC
FLEET LIAISON R & D	PACELOPTEVFOR, OPTEVFOR
PROJ OFF TEST EVAL SHIPS SYSTEMS	PACELOPTEVFOR, OPTEVFOR
PROJ OFF TEST EVAL WPN SYSTEMS	PACELOPTEVFOR, OPTEVFOR
PROJ OFF TEST EVAL EW SYSTEMS	PACELOPTEVFOR, OPTEVFOR
NAVPRO	FIELD
WPN DEVELOP PROGRAM OFF	NAVY LABS
PROJECT OFFICER	NAVY LABS, PTHU, PTMGU
TRAINING OFFICER	SUPSHIPS

GUIDANCE BILLET LIST (SURFACE RESTRICTED LINE OFFICERS)

BILLET TYPE	LOCATION
LIEUTENANT COMMANDER	
ASST PROJ MGR	NAVSEC, NLEX, NORD, NSHIPS
R & D ASSESSMENT OFFICER	SUPSHIPS
HEAD LOGISTICS UNIT	SSPO
WEAPON SYSTEMS OFFICE (1700)	NORD
ASST NAVPRO (1700)	FIELD
PROJECT COORDINATOR (1400)	NAVSEC
SYSTEMS INTEGRATION (1400)	NLEX
ASST PROJECT OFFICER	SUPSHIPS
ASST PROJ MGR TECHNICAL	NSHIPS, NLEX, NMAT PM
SHIP SUPERVISOR DIV	SUPSHIP (NEW CONST)
COMMANDER	
ASST PROJ MGR TECHNICAL	NAVMAT PM, NLEX, NSHIPS, NORD
ASST PROJ MGR PLANS, PROGRAMS	NAVMAT PM, NLEX, NSHIPS, NORD
ASST PROJ MGR - PROJ TECH REP	SUPSHIP
ASST PROJ MGR WPN SYS (1700)	NMAT PM
PROJECT MANAGER (1400)	NLEX
DIVISION DIRECTOR (1700)	NLEX, NORD, NMAT PM
TECHNICAL DIRECTOR (1400)	NAVSEC
RESIDENT SUPSHIPS (1400)	FIELD (Culver City)
HEAD PROD, QUAL ASS. DIV (1400)	SSPO, SUPSHIPS
HEAD SECTION (1700)	SSPO
PROJECT OFFICER (1400)	NLEX
FLEET LIAISON (1400)	NLEX
TEST OFFICER (1700)	WPN CEN, ALBQUE
DIVISION HEAD (1700)	TEST CENTER
	OPTEVOR, PACELOPTEVFOR

GUIDANCE BILLET LIST (SUBSURFACE UNRESTRICTED LINE OFFICERS)

BILLET TYPE	LOCATION
LIEUTENANT COMMANDERS	
SYSTEMS INTEGRATION	NLEX
PROJECT OFFICER	NPRO
ASST SECTION HEAD	SSPO
HEAD PROJECT SECTION	OPNAV
ASST BRANCH HEAD	SSPO
ASST PROJ MGR TEST EVAL	NMAT PM, NSHIPS, NLEX, NORD
ASST PROJ MGR LOGISTICS	NMAT PM, NSHIPS, NLEX, NORD
FLEET LIAISON	SSPO
FLEET LOGISTICS COORDINATOR	SSPO
ASST ADVANCED PLANS	SSPO
PROJ OFFICER	TEST STATION, NSHIPS, NLEX
PROJECT OFFICER TEST EVAL WPN	OPTEVFOR, PACELOPTEVFOR
FLEET LIAISON R & D	OPTEVFOR, OPNAV
COMBAT SYSTEMS COORDINATOR	NSHIPS
COMMANDER	
ASST BRANCH HEAD	SSPO
HEAD TEST DIVISION - MISSILE	SSPO
ASST PROJ MGR	SSPO, NLEX
COMBAT SYSTEMS	NAVSEC
ASST PROJ MGR R & D	NSHIPS, NLEX, NMAT PM
ASST PROJ MGR SYSTEMS MGR	NORD
ASST PROJ MGR TEST EVAL	NSHIPS, NLEX, NMAT PM, NORD
ASST PROJ MGR ENGINEERING	NORD
SECTION HEAD	SSPO
PROJ OFFICER	OPTEVFOR, PACELOPTEVFOR
DEVELOPMENT COORDINATOR	OPNAV
DIVISION HEAD	OPTEVFOR, PACELOPTEVFOR
NAVPRO, SUPSHIPS	FIELD

GUIDANCE BILLET LIST (SUBSURFACE RESTRICTED LINE OFFICERS)

BILLET TYPE	LOCATION
LIEUTENANT COMMANDER	
SHIP SUPERVISOR	NAVSHIPYD (NEW CONST)
PROJECT COORDINATOR	NAVSEC
SYSTEMS INTEGRATION	NLEX, NSHIPS
ASST PROJ MGR PLANS PROGRAMS	NSHIPS, NLEX, NORD, NMAT PM
ASST PROJ MGR TECHNICAL	NLEX, NSHIPS
PROJECT OFFICER	NAVSEC, NSHIPS
COMMANDER	
DIVISION DIRECTOR	NLEX, NSHIPS, SSPO
DEPUTY PROJECT MANAGER	NLEX, NSHIPS, NMAT PM
ASST PROJ MGR TECHNICAL	NLEX, NSHIPS, NMAT PM
FLEET LIAISON	NLEX
HEAD UNIT	SSPO
PROJECT ASSISTANT	NAVSEC
NAVPRO, SUPSHIPS	FIELD

GUIDANCE BILLET LIST (AVIATION UNRESTRICTED LINE OFFICERS)

BILLET TYPE	
LIEUTENANT COMMANDER	
ASST PROJ MGR LOGISTICS	NMAT PM, NAIR PM
ASST PROJ MGR EQUIP	NMAT PM, NAIR PM
ASST PROJ MGR AIRFRAME	NMAT PM, NAIR PM
ASST PROJ MGR SYSTEM INTEGRATION	NMAT PM, NAIR PM
ASST PROJ MGR ACFT TYPE	NMAT PM, NAIR PM
ASST PROJ MGR AVIONICS/ARM	NMAT PM, NAIR PM
ASST PROJ MGR TRAINING	NMAT PM, NAIR PM
PROJECT SUPPORT WEAPON	AIR 05, 04
PROJECT SUPPORT ACFT TYPE	AIR 05, 04
PROJECT OFF TEST EVAL ACFT TYPE	OPTEVFOR, PACELOPTEVFOR, NPRO
PROJECT OFF TEST EVAL WPN	OPTEVFOR, PACELOPTEVFOR, NPRO
PROJECT OFF TEST EVAL EW	OPTEVFOR, PACELOPTEVFOR, NPRO
R & D COORDINATION	OPNAV, OPTEVFOR
SYSTEMS INTEGRATION	NLEX
PROJ OFFICER	NAVY LABS
BRANCH HEAD	PAX RIVER
PROJ OFF TEST EVAL	PAX RIVER
MIL ASST WEAPON ENGINEERING	CHINA LAKE
COMMANDER	
DEVELOPMENT COORDINATOR	OPNAV
DEPUTY PROJ MGR	NLEX, NAIR
DIVISION DIRECTOR PROJECT	NLEX, NAIR, NMAT PM
ASST PROJ MGR TEST EVAL	NLEX, NAIR, NMAT PM
ASST PROJ MGR EW	NLEX, NAIR, NMAT PM
ASST PROJ MGR LOGISTICS	NLEX, NAIR, NMAT PM
SYSTEMS COORDINATOR	AIR 05
PROJ OFFICER TEST EVAL	NAVPRO
PROJ OFFICER TRAINING	NAVPRO
PROGRESS COORDINATOR	NWPENGSUPPACT
PROJECT SUPPORT WPN TYPE	AIR 05, 04
PROJECT SUPPORT ACFT TYPE	AIR 05, 04
PROJ OFF TEST EVAL ASW	OPTEVFOR, PAXRIVER, PACELOPTEVFOR
PROJ OFF TEST EVAL ACFT TYPE AVIONICS	OPTEVFOR, PAXRIVER, PACELOPTEVFOR
PROJ OFF TEST EVAL EW	OPTEVFOR, PAXRIVER, PACELOPTEVFOR
ASST PROJECT COORDINATOR	OPNAV
BRANCH HEAD	PAX RIVER
PROGRESS COORDINATOR	PAX RIVER

GUIDANCE BILLET LIST (AVIATION RESTRICTED LINE OFFICERS)

BILLET TYPE	LOCATION
LIEUTENANT COMMANDER	
READINESS ASSURANCE OFFICER	NMAT
ASST PROJ MGR AVIA PERSONNEL	NAIR PM
PROJECT OFFICER	NAIR PM
ASST PROJ MGR ADVANCED ENGR	NMAT PM, NAIR PM
SYSTEMS INTEGRATION	NLEX
PROJ SUPPORT ACFT	AIR 05, 04
PROJ SUPPORT WPN	AIR 05, 04
PROJECT OFFICER	NAVY DEVEL, TEST, EVAL ACTIVITY
ASST NAVPRO	FIELD
BRANCH HEAD	PT MAGU
COMMANDER	
ASST PM ADVANCED SYSTEMS	NMAT PM, NAIR PM (AIR 01)
ASST PM INTEGRATION	NAIR PM
ASST PM AIR VEHICLES	NAIR PM
ASST PM ACFT TYPE	NAIR PM
ASST PM WEAPON TYPE	NAIR PM
ASST PM FIELD INSTALLATION	NAIR PM
ASST PM TECHNICAL DIRECTOR	NAIR PM
ASST PM AIR SYSTEMS	NAIR PM (AIR 01)
DEPUTY PROJECT MANAGER	NAIR PM (AIR 01)
NAVPRO	FIELD
DIVISION DIRECTOR	NLEX, AIR 05, 04

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COMMENT          ANALYSIS OF QUESTIONNAIRE ON PM CAREER DEVELOPMENT
RUN NAME         DECK SETUP FOR SELECTED QUESTIONS
FILE NAME        PMDEVEL
VARIABLE LIST    ASSIGN,DESIG,GRADE,GENKNOW,SPECKNOW,EDUC,EXPTIME,
                 EXPLOCN,TIMELOCN, VAR010 TO VAR072,VAR075
INPUT FORMAT     FIXED(72F1.0,2X,F3.0,3X)

IGNORING INDEFINITE REPETITION, THE INPUT FORMAT PROVIDES FOR  73 VARIABLES.   73 WILL BE READ.
IT PROVIDES FOR  1 RECORDS ('CARDS') PER CASE.  A MAXIMUM OF   80 'COLUMNS' ARE USED ON A RECORD.

PRINT FORMAT     ASSIGN,DESIG, GRADE,GENKNOW,SPECKNOW,EDUC,EXPTIME,
                 EXPLOCN,TIMELOCN,VAR010 TO VAR072, VAR075 (0)

# OF CASES       173
INPUT MEDIUM     CARD
VAR LABELS       ASSIGN,ASSIGNMENT AREA/
                 DESIG, DESIGNATOR AREA/
                 GRADE, RANK/
                 GENKNOW, AREA OF GENERAL KNOWLEDGE/
                 SPECKNOW, AREA OF SPECICAL KNOWLEDGE/
                 EDUC, HIGHEST LEVEL OF EDUCATION/
                 EXPTIME, TIME IN WSAM AREAS/
                 EXPLOCN, LOCATION OF EXPERIENCE/
                 TIMELOCN, TIME IN PRESENT ASSIGNMENT/
                 VAR010 TO VAR049, RANKING QUESTIONS/
                 VAR050 TO VAR072, AGREE-DISAGREE QUESTIONS/
                 VAR075, QUESTIONNAIRE NUMBER
VALUE LABELS     ASSIGN (1) PERSONNEL (2) TECH REQUIREMENTS
                 (3) PM AND STAFF (4)FIELD (5)OP REQUIREMENTS/
                 DESIG (1) URL (2) RL (3) STAFF (4) CIVILIAN/
                 GRADE (1) LCDR (2) CDR (3) CAPT (4) CIVILIAN (5)FLAG/
                 GENKNOW (1)SURFACE(2)SUBSURFACE(3)AVIATION(4)ELECTRONICS
                 (5) ORDNANCE/
                 SPECKNOW (1)TECHNICAL(2)CONTRACTING (3)FUNDING (4)TEST
                 (5)PROJECT MANAGEMENT/
                 EDUC (1)BS TECHNICAL (2)BS NON-TECHNICAL(3)MS TECHNICAL
                 (4)MS NON-TECHNICAL (5)DUAL MASTERS/
                 EXPTIME (1)0-2YRS (2)2-4 YRS (3) 4-6 YRS (4)6-8 YRS
                 (5) OVER 8 YRS/
                 EXPLOCN (1) WASHINGTON (2)FIELD (3) BOTH/
                 TIMELOCN (1)LESS THAN 6 MOS (2)6-12 MOS (3)1-2 YRS
                 (4) 2-3 YRS (5) OVER 3 YRS/
                 VAR010 TO VAR049 (1) FIRST CHOICE (2) SECOND CHOICE
                 (3) THIRD CHOICE (4)FOURTH CHOICE (5) FIFTH CHOICE/
                 VAR050 TO VAR072 (1) STRONGLY AGREE (2)AGREE
                 (3) NEUTRAL (4) DISAGREE (5)STRONGLY DISAGREE
MISSING VALUES   ASSIGN TO TIMELOCN, VAR010 TO VAR072 (6)
CROSSTABS        ASSIGN,GRADE TO TIMELOCN,VAR025 TO VAR034,
                 VAR045 TO VAR049,VAR051,VAR056,VAR059,VAR061,VAR062,
                 VAR064,VAR066 TO VAR069,VAR071,VAR072 BY DESIG
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CROSS TABULATION OF DESIGNATOR AREA BY

ASSIGN	DESIG URL 1.	RL 2.	STAFF 3.	CIVILIAN 4.	ROW TOTAL
1. PERSONNEL	4 100.0 5.1 2.4	0 0.0 0.0 0.0	0 0.0 0.0 0.0	0 0.0 0.0 0.0	4 2.4
2. TECH REQUIREMENT	11 61.1 13.9 6.5	6 33.3 7.3 3.5	1 5.6 25.0 0.6	0 0.0 0.0 0.0	18 10.6
3. PM AND STAFF	39 49.4 49.4 22.9	36 45.6 43.9 21.2	2 2.5 50.0 1.2	2 2.5 40.0 1.2	79 46.5
4. FIELD	15 26.3 19.0 8.8	40 70.2 48.8 23.5	1 1.8 25.0 0.6	1 1.8 20.0 0.6	57 33.5
5. OP REQUIREMENTS	10 83.3 12.7 5.9	0 0.0 0.0 0.0	0 0.0 0.0 0.0	2 16.7 40.0 1.2	12 7.1
COLUMN TOTAL	79 46.5	82 48.2	4 2.4	5 2.9	170 100.0

CHI SQUARE = 36.19182 WITH 12 DEGREES OF FREEDOM

NUMBER OF MISSING OBSERVATIONS = 3

ASSIGNMENT AREA
QUESTION 1

CROSS TABULATION OF DESIGNATOR AREA BY

GRADE	COUNT / ROW PCT / COL PCT / TOT PCT	DESIG URL 1.	RL 2.	STAFF 3.	CIVILIAN 4.	ROW TOTAL
LCDR	1.	3	11	0	0	14
		21.4	78.6	0.0	0.0	8.1
		3.8	13.4	0.0	0.0	
		1.7	6.4	0.0	0.0	
CDR	2.	20	24	2	0	46
		43.5	52.2	4.3	0.0	26.6
		25.0	29.3	50.0	0.0	
		11.6	13.9	1.2	0.0	
CAPT	3.	50	46	2	0	98
		51.0	46.9	2.0	0.0	56.6
		62.5	56.1	50.0	0.0	
		28.9	26.6	1.2	0.0	
CIVILIAN	4.	0	0	0	7	7
		0.0	0.0	0.0	100.0	4.0
		0.0	0.0	0.0	100.0	
		0.0	0.0	0.0	4.0	
FLAG	5.	7	1	0	0	8
		87.5	12.5	0.0	0.0	4.6
		8.8	1.2	0.0	0.0	
		4.0	0.6	0.0	0.0	
	COLUMN TOTAL	80	82	4	7	173
		46.2	47.4	2.3	4.0	100.0

CHI SQUARE = 184.60112 WITH 12 DEGREES OF FREEDOM

GRADE
QUESTION 3

CROSS TABULATION OF DESIGNATOR AREA BY

GENKNOW	COUNT / ROW PCT / COL PCT / TOT PCT	DESIG URL 1.	RL 2.	STAFF 3.	CIVILIAN 4.	ROW TOTAL
SURFACE	1.	20	23	3	1	47
		42.6	48.9	6.4	2.1	27.6
		25.0	28.4	75.0	20.0	
		11.8	13.5	1.8	0.6	
SUBSURFACE	2.	13	11	0	1	25
		52.0	44.0	0.0	4.0	14.7
		16.3	13.6	0.0	20.0	
		7.6	6.5	0.0	0.6	
AVIATION	3.	40	28	0	2	70
		57.1	40.0	0.0	2.9	41.2
		50.0	34.6	0.0	40.0	
		23.5	16.5	0.0	1.2	
ELECTRONICS	4.	4	12	1	0	17
		23.5	70.6	5.9	0.0	10.0
		5.0	14.8	25.0	0.0	
		2.4	7.1	0.6	0.0	
ORDNANCE	5.	3	7	0	1	11
		27.3	63.6	0.0	9.1	6.5
		3.8	8.6	0.0	20.0	
		1.8	4.1	0.0	0.6	
COLUMN TOTAL		80	81	4	5	170
		47.1	47.6	2.4	2.9	100.0

CHI SQUARE = 16.92892 WITH 12 DEGREES OF FREEDOM

NUMBER OF MISSING OBSERVATIONS = 3

AREA OF GENERAL KNOWLEDGE
QUESTION 4

CROSS TABULATION OF DESIGNATOR AREA BY . . . . . .

SPECKNOW	COUNT / ROW PCT / COL PCT / TOT PCT	DESIG URL 1.	RL 2.	STAFF 3.	CIVILIAN 4.	ROW TOTAL
TECHNICAL	1.	21	29	2	2	54
		38.9	53.7	3.7	3.7	32.3
		28.0	35.4	50.0	33.3	
		12.6	17.4	1.2	1.2	
CONTRACTING	2.	0	0	1	0	1
		0.0	0.0	100.0	0.0	0.6
		0.0	0.0	25.0	0.0	
		0.0	0.0	0.6	0.0	
FUNDING	3.	2	0	0	1	3
		66.7	0.0	0.0	33.3	1.8
		2.7	0.0	0.0	16.7	
		1.2	0.0	0.0	0.6	
TEST	4.	3	1	0	1	5
		60.0	20.0	0.0	20.0	3.0
		4.0	1.2	0.0	16.7	
		1.8	0.6	0.0	0.6	
PROJECT MANAGEME	5.	49	52	1	2	104
		47.1	50.0	1.0	1.9	62.3
		65.3	63.4	25.0	33.3	
		29.3	31.1	0.6	1.2	
COLUMN TOTAL		75	82	4	6	167
		44.9	49.1	2.4	3.6	100.0

CHI SQUARE = 57.86446 WITH 12 DEGREES OF FREEDOM

NUMBER OF MISSING OBSERVATIONS = 6

AREA OF SPECIALIZED KNOWLEDGE
QUESTION 5

CROSS TABULATION OF DESIGNATOR AREA BY

EDUC	DESIG URL 1.	RL 2.	STAFF 3.	CIVILIAN 4.	ROW TOTAL
1. BS TECHNICAL	20	5	0	3	28
	71.4	17.9	0.0	10.7	17.4
	28.6	6.2	0.0	50.0	
	12.4	3.1	0.0	1.9	
2. BS NON-TECHNICAL	7	1	0	2	10
	70.0	10.0	0.0	20.0	6.2
	10.0	1.2	0.0	33.3	
	4.3	0.6	0.0	1.2	
3. MS TECHNICAL	26	57	3	0	86
	30.2	66.3	3.5	0.0	53.4
	37.1	70.4	75.0	0.0	
	16.1	35.4	1.9	0.0	
4. MS NON-TECHNICAL	11	10	1	1	23
	47.8	43.5	4.3	4.3	14.3
	15.7	12.3	25.0	16.7	
	6.8	6.2	0.6	0.6	
5. DUAL MASTERS	6	8	0	0	14
	42.9	57.1	0.0	0.0	8.7
	8.6	9.9	0.0	0.0	
	3.7	5.0	0.0	0.0	
COLUMN TOTAL	70	81	4	6	161
	43.5	50.3	2.5	3.7	100.0

CHI SQUARE = 40.50117 WITH 12 DEGREES OF FREEDOM

NUMBER OF MISSING OBSERVATIONS = 12

HIGHEST LEVEL OF EDUCATION
QUESTION 6

CROSS TABULATION OF DESIGNATOR AREA BY

EXPTIME	DESIG	URL 1.	RL 2.	STAFF 3.	CIVILIAN 4.	ROW TOTAL
0-2YRS	1.	9	0	0	0	9
		100.0	0.0	0.0	0.0	5.2
		11.3	0.0	0.0	0.0	
		5.2	0.0	0.0	0.0	
2-4 YRS	2.	18	8	0	0	26
		69.2	30.8	0.0	0.0	15.1
		22.5	9.9	0.0	0.0	
		10.5	4.7	0.0	0.0	
4-6 YRS	3.	14	10	0	0	24
		58.3	41.7	0.0	0.0	14.0
		17.5	12.3	0.0	0.0	
		8.1	5.8	0.0	0.0	
6-8 YRS	4.	11	7	0	1	19
		57.9	36.8	0.0	5.3	11.0
		13.8	8.6	0.0	14.3	
		6.4	4.1	0.0	0.6	
OVER 8 YRS	5.	28	56	4	6	94
		29.8	59.6	4.3	6.4	54.7
		35.0	69.1	100.0	85.7	
		16.3	32.6	2.3	3.5	
COLUMN TOTAL		80	81	4	7	172
		46.5	47.1	2.3	4.1	100.0

CHI SQUARE = 31.74040 WITH 12 DEGREES OF FREEDOM

NUMBER OF MISSING OBSERVATIONS = 1

TIME IN WSAM ASSIGNMENTS
QUESTION 7

CROSS TABULATION OF DESIGNATOR AREA BY

EXPLOCN	COUNT / ROW PCT / COL PCT / TOT PCT	DESIG URL 1.	RL 2.	STAFF 3.	CIVILIAN 4.	ROW TOTAL
WASHINGTON	1.	17	4	0	3	24
		70.8	16.7	0.0	12.5	14.0
		21.5	4.9	0.0	42.9	
		9.9	2.3	0.0	1.7	
FIELD	2.	20	16	0	1	37
		54.1	43.2	0.0	2.7	21.5
		25.3	19.5	0.0	14.3	
		11.6	9.3	0.0	0.6	
BOTH	3.	42	62	4	3	111
		37.8	55.9	3.6	2.7	64.5
		53.2	75.6	100.0	42.9	
		24.4	36.0	2.3	1.7	
COLUMN TOTAL		79	82	4	7	172
		45.9	47.7	2.3	4.1	100.0

CHI SQUARE = 18.97473 WITH 6 DEGREES OF FREEDOM

NUMBER OF MISSING OBSERVATIONS = 1.

LOCATION OF EXPERIENCE
QUESTION 8

CROSS TABULATION OF DESIGNATOR AREA BY

TIMELOCN	DESIG URL 1.	RL 2.	STAFF 3.	CIVILIAN 4.	ROW TOTAL
1. LESS THAN 6 MOS	11 37.9 13.8 6.4	18 62.1 22.0 10.4	0 0.0 0.0 0.0	0 0.0 0.0 0.0	29 16.8
2. 6-12 MOS	18 60.0 22.5 10.4	10 33.3 12.2 5.8	1 3.3 25.0 0.6	1 3.3 14.3 0.6	30 17.3
3. 1-2 YRS	23 46.0 28.8 13.3	23 46.0 28.0 13.3	1 2.0 25.0 0.6	3 6.0 42.9 1.7	50 28.9
4. 2-3 YRS	15 38.5 18.8 8.7	22 56.4 26.8 12.7	1 2.6 25.0 0.6	1 2.6 14.3 0.6	39 22.5
5. OVER 3 YRS	13 52.0 16.3 7.5	9 36.0 11.0 5.2	1 4.0 25.0 0.6	2 8.0 28.6 1.2	25 14.5
COLUMN TOTAL	80 46.2	82 47.4	4 2.3	7 4.0	173 100.0

CHI SQUARE = 10.30059 WITH 12 DEGREES OF FREEDOM

TIME IN PRESENT LOCATION
QUESTION 9

CROSS TABULATION OF DESIGNATOR AREA BY

VAR025	DESIG URL 1.	RL 2.	STAFF 3.	CIVILIAN 4.	ROW TOTAL
1. FIRST CHOICE	48	40	3	6	97
	49.5	41.2	3.1	6.2	56.7
	60.0	49.4	75.0	100.0	
	28.1	23.4	1.8	3.5	
2. SECOND CHOICE	13	28	0	0	41
	31.7	68.3	0.0	0.0	24.0
	16.3	34.6	0.0	0.0	
	7.6	16.4	0.0	0.0	
3. THIRD CHOICE	4	9	0	0	13
	30.8	69.2	0.0	0.0	7.6
	5.0	11.1	0.0	0.0	
	2.3	5.3	0.0	0.0	
4. FOURTH CHOICE	8	1	1	0	10
	80.0	10.0	10.0	0.0	5.8
	10.0	1.2	25.0	0.0	
	4.7	0.6	0.6	0.0	
5. FIFTH CHOICE	7	3	0	0	10
	70.0	30.0	0.0	0.0	5.8
	8.8	3.7	0.0	0.0	
	4.1	1.8	0.0	0.0	
COLUMN TOTAL	80	81	4	6	171
	46.8	47.4	2.3	3.5	100.0

CHI SQUARE = 24.64105 WITH 12 DEGREES OF FREEDOM

NUMBER OF MISSING OBSERVATIONS = 2

RANKING ASSIGNMENT TO PROJECT STAFF
QUESTION 13A

CROSS TABULATION OF DESIGNATOR AREA BY . . . . . .

VAR026	DESIG: URL 1.	RL 2.	STAFF 3.	CIVILIAN 4.	ROW TOTAL
FIRST CHOICE 1.	11	28	0	0	39
	28.2	71.8	0.0	0.0	22.8
	13.8	34.6	0.0	0.0	
	6.4	16.4	0.0	0.0	
SECOND CHOICE 2.	25	20	0	2	47
	53.2	42.6	0.0	4.3	27.5
	31.3	24.7	0.0	33.3	
	14.6	11.7	0.0	1.2	
THIRD CHOICE 3.	13	17	2	2	34
	38.2	50.0	5.9	5.9	19.9
	16.3	21.0	50.0	33.3	
	7.6	9.9	1.2	1.2	
FOURTH CHOICE 4.	17	9	1	0	27
	63.0	33.3	3.7	0.0	15.8
	21.3	11.1	25.0	0.0	
	9.9	5.3	0.6	0.0	
FIFTH CHOICE 5.	14	7	1	2	24
	58.3	29.2	4.2	8.3	14.0
	17.5	8.6	25.0	33.3	
	8.2	4.1	0.6	1.2	
COLUMN TOTAL	80	81	4	6	171
	46.8	47.4	2.3	3.5	100.0

CHI SQUARE = 22.93201 WITH 12 DEGREES OF FREEDOM

NUMBER OF MISSING OBSERVATIONS = 2

RANK ASSIGNMENT TO FUNCTIONAL DESK
QUESTION 13B

CROSS TABULATION OF DESIGNATOR AREA BY

VAR027	DESIG URL (1.)	RL (2.)	STAFF (3.)	CIVILIAN (4.)	ROW TOTAL
1. FIRST CHOICE	11	2	0	0	13
	84.6	15.4	0.0	0.0	7.6
	13.8	2.5	0.0	0.0	
	6.5	1.2	0.0	0.0	
2. SECOND CHOICE	16	13	2	1	32
	50.0	40.6	6.3	3.1	18.8
	20.0	16.3	50.0	16.7	
	9.4	7.6	1.2	0.6	
3. THIRD CHOICE	23	15	1	1	40
	57.5	37.5	2.5	2.5	23.5
	28.8	18.8	25.0	16.7	
	13.5	8.8	0.6	0.6	
4. FOURTH CHOICE	21	29	1	4	55
	38.2	52.7	1.8	7.3	32.4
	26.3	36.3	25.0	66.7	
	12.4	17.1	0.6	2.4	
5. FIFTH CHOICE	9	21	0	0	30
	30.0	70.0	0.0	0.0	17.6
	11.3	26.3	0.0	0.0	
	5.3	12.4	0.0	0.0	
COLUMN TOTAL	80	80	4	6	170
	47.1	47.1	2.4	3.5	100.0

CHI SQUARE = 22.20226 WITH 12 DEGREES OF FREEDOM

NUMBER OF MISSING OBSERVATIONS = 3

RANK ASSIGNMENT TO OPERATIONAL REQUIREMENTS AREA

QUESTION 13C

CROSS TABULATION OF DESIGNATOR AREA BY

VAR028	DESIG URL (1.)	RL (2.)	STAFF (3.)	CIVILIAN (4.)	ROW TOTAL
1. FIRST CHOICE	6	7	0	0	13
	46.2	53.8	0.0	0.0	7.6
	7.5	8.8	0.0	0.0	
	3.5	4.1	0.0	0.0	
2. SECOND CHOICE	16	9	2	2	29
	55.2	31.0	6.9	6.9	17.1
	20.0	11.3	50.0	33.3	
	9.4	5.3	1.2	1.2	
3. THIRD CHOICE	17	17	0	3	37
	45.9	45.9	0.0	8.1	21.8
	21.3	21.3	0.0	50.0	
	10.0	10.0	0.0	1.8	
4. FOURTH CHOICE	22	28	0	0	50
	44.0	56.0	0.0	0.0	29.4
	27.5	35.0	0.0	0.0	
	12.9	16.5	0.0	0.0	
5. FIFTH CHOICE	19	19	2	1	41
	46.3	46.3	4.9	2.4	24.1
	23.8	23.8	50.0	16.7	
	11.2	11.2	1.2	0.6	
COLUMN TOTAL	80	80	4	6	170
	47.1	47.1	2.4	3.5	100.0

CHI SQUARE = 14.59427 WITH 12 DEGREES OF FREEDOM

NUMBER OF MISSING OBSERVATIONS = 3

RANK ASSIGNMENT TO R & D AREA
QUESTION 13D

CROSS TABULATION OF DESIGNATOR AREA BY

VAR029	DESIG	URL (1.)	RL (2.)	STAFF (3.)	CIVILIAN (4.)	ROW TOTAL
1. FIRST CHOICE	COUNT	4	4	1	0	9
	ROW PCT	44.4	44.4	11.1	0.0	5.3
	COL PCT	5.0	4.9	25.0	0.0	
	TOT PCT	2.3	2.3	0.6	0.0	
2. SECOND CHOICE	COUNT	10	11	0	1	22
	ROW PCT	45.5	50.0	0.0	4.5	12.9
	COL PCT	12.5	13.6	0.0	16.7	
	TOT PCT	5.8	6.4	0.0	0.6	
3. THIRD CHOICE	COUNT	23	22	1	0	46
	ROW PCT	50.0	47.8	2.2	0.0	26.9
	COL PCT	28.8	27.2	25.0	0.0	
	TOT PCT	13.5	12.9	0.6	0.0	
4. FOURTH CHOICE	COUNT	12	13	1	2	28
	ROW PCT	42.9	46.4	3.6	7.1	16.4
	COL PCT	15.0	16.0	25.0	33.3	
	TOT PCT	7.0	7.6	0.6	1.2	
5. FIFTH CHOICE	COUNT	31	31	1	3	66
	ROW PCT	47.0	47.0	1.5	4.5	38.6
	COL PCT	38.8	38.3	25.0	50.0	
	TOT PCT	18.1	18.1	0.6	1.8	
COLUMN TOTAL		80	81	4	6	171
		46.8	47.4	2.3	3.5	100.0

CHI SQUARE = 7.37829 WITH 12 DEGREES OF FREEDOM

NUMBER OF MISSING OBSERVATIONS = 2

RANK ASSIGNMENT TO FINANCIAL MANAGEMENT AREA
QUESTION 13E

CROSS TABULATION OF DESIGNATOR AREA BY

VAR030	DESIG URL 1.	RL 2.	STAFF 3.	CIVILIAN 4.	ROW TOTAL
FIRST CHOICE 1.	12	28	1	2	43
	27.9	65.1	2.3	4.7	25.1
	15.0	34.6	25.0	33.3	
	7.0	16.4	0.6	1.2	
SECOND CHOICE 2.	12	16	2	0	30
	40.0	53.3	6.7	0.0	17.5
	15.0	19.8	50.0	0.0	
	7.0	9.4	1.2	0.0	
THIRD CHOICE 3.	18	10	1	1	30
	60.0	33.3	3.3	3.3	17.5
	22.5	12.3	25.0	16.7	
	10.5	5.8	0.6	0.6	
FOURTH CHOICE 4.	27	17	0	1	45
	60.0	37.8	0.0	2.2	26.3
	33.8	21.0	0.0	16.7	
	15.8	9.9	0.0	0.6	
FIFTH CHOICE 5.	11	10	0	2	23
	47.8	43.5	0.0	8.7	13.5
	13.8	12.3	0.0	33.3	
	6.4	5.8	0.0	1.2	
COLUMN TOTAL	80	81	4	6	171
	46.8	47.4	2.3	3.5	100.0

CHI SQUARE = 18.96550 WITH 12 DEGREES OF FREEDOM

NUMBER OF MISSING OBSERVATIONS = 2

RANK ASSIGNMENT TO NAVAL PLANT REPRESENTATIVE
QUESTION 14A

CROSS TABULATION OF DESIGNATOR AREA BY

DESIG

VAR031	URL 1.	RL 2.	STAFF 3.	CIVILIAN 4.	ROW TOTAL
1. FIRST CHOICE	21	11	0	1	33
	63.6	33.3	0.0	3.0	19.3
	26.3	13.6	0.0	16.7	
	12.3	6.4	0.0	0.6	
2. SECOND CHOICE	29	18	0	3	50
	58.0	36.0	0.0	6.0	29.2
	36.3	22.2	0.0	50.0	
	17.0	10.5	0.0	1.8	
3. THIRD CHOICE	13	25	2	0	40
	32.5	62.5	5.0	0.0	23.4
	16.3	30.9	50.0	0.0	
	7.6	14.6	1.2	0.0	
4. FOURTH CHOICE	14	22	1	2	39
	35.9	56.4	2.6	5.1	22.8
	17.5	27.2	25.0	33.3	
	8.2	12.9	0.6	1.2	
5. FIFTH CHOICE	3	5	1	0	9
	33.3	55.6	11.1	0.0	5.3
	3.8	6.2	25.0	0.0	
	1.8	2.9	0.6	0.0	
COLUMN TOTAL	80	81	4	6	171
	46.8	47.4	2.3	3.5	100.0

CHI SQUARE = 20.93655 WITH 12 DEGREES OF FREEDOM

NUMBER OF MISSING OBSERVATIONS = 2

RANK ASSIGNMENT TO NAVY TEST CENTER
QUESTION 14B

CROSS TABULATION OF DESIGNATOR AREA BY

VAR032	DESIG URL (1.)	RL (2.)	STAFF (3.)	CIVILIAN (4.)	ROW TOTAL
1. FIRST CHOICE	28	12	1	2	43
	65.1	27.9	2.3	4.7	25.1
	35.0	14.8	25.0	33.3	
	16.4	7.0	0.6	1.2	
2. SECOND CHOICE	20	17	1	2	40
	50.0	42.5	2.5	5.0	23.4
	25.0	21.0	25.0	33.3	
	11.7	9.9	0.6	1.2	
3. THIRD CHOICE	12	20	1	2	35
	34.3	57.1	2.9	5.7	20.5
	15.0	24.7	25.0	33.3	
	7.0	11.7	0.6	1.2	
4. FOURTH CHOICE	11	20	0	0	31
	35.5	64.5	0.0	0.0	18.1
	13.8	24.7	0.0	0.0	
	6.4	11.7	0.0	0.0	
5. FIFTH CHOICE	9	12	1	0	22
	40.9	54.5	4.5	0.0	12.9
	11.3	14.8	25.0	0.0	
	5.3	7.0	0.6	0.0	
COLUMN TOTAL	80	81	4	6	171
	46.8	47.4	2.3	3.5	100.0

CHI SQUARE = 15.84810 WITH 12 DEGREES OF FREEDOM

NUMBER OF MISSING OBSERVATIONS = 2

RANK ASSIGNMENT TO OPERATIONAL TEST EVALUATION
QUESTION 14C

CROSS TABULATION OF DESIGNATOR AREA BY

VAR033	DESIG URL 1.	RL 2.	STAFF 3.	CIVILIAN 4.	ROW TOTAL
1. FIRST CHOICE	9	11	1	1	22
	40.9	50.0	4.5	4.5	12.9
	11.3	13.6	25.0	16.7	
	5.3	6.4	0.6	0.6	
2. SECOND CHOICE	16	12	0	0	28
	57.1	42.9	0.0	0.0	16.4
	20.0	14.8	0.0	0.0	
	9.4	7.0	0.0	0.0	
3. THIRD CHOICE	24	19	0	3	46
	52.2	41.3	0.0	6.5	26.9
	30.0	23.5	0.0	50.0	
	14.0	11.1	0.0	1.8	
4. FOURTH CHOICE	14	14	3	1	32
	43.8	43.8	9.4	3.1	18.7
	17.5	17.3	75.0	16.7	
	8.2	8.2	1.8	0.6	
5. FIFTH CHOICE	17	25	0	1	43
	39.5	58.1	0.0	2.3	25.1
	21.3	30.9	0.0	16.7	
	9.9	14.6	0.0	0.6	
COLUMN TOTAL	80	81	4	6	171
	46.8	47.4	2.3	3.5	100.0

CHI SQUARE = 15.67890 WITH 12 DEGREES OF FREEDOM

NUMBER OF MISSING OBSERVATIONS = 2

RANK ASSIGNMENT TO LABORATORY
QUESTION 14D

CROSS TABULATION OF DESIGNATOR AREA BY

VAR034	DESIG URL 1.	RL 2.	STAFF 3.	CIVILIAN 4.	ROW TOTAL
1. FIRST CHOICE	10	19	1	0	30
	33.3	63.3	3.3	0.0	17.5
	12.5	23.5	25.0	0.0	
	5.8	11.1	0.6	0.0	
2. SECCND CHOICE	3	18	1	1	23
	13.0	78.3	4.3	4.3	13.5
	3.8	22.2	25.0	16.7	
	1.8	10.5	0.6	0.6	
3. THIRD CHOICE	13	7	0	0	20
	65.0	35.0	0.0	0.0	11.7
	16.3	8.6	0.0	0.0	
	7.6	4.1	0.0	0.0	
4. FOURTH CHOICE	14	8	0	2	24
	58.3	33.3	0.0	8.3	14.0
	17.5	9.9	0.0	33.3	
	8.2	4.7	0.0	1.2	
5. FIFTH CHOICE	40	29	2	3	74
	54.1	39.2	2.7	4.1	43.3
	50.0	35.8	50.0	50.0	
	23.4	17.0	1.2	1.8	
COLUMN TOTAL	80	81	4	6	171
	46.8	47.4	2.3	3.5	100.0

CHI SQUARE = 23.68271 WITH 12 DEGREES OF FREEDOM

NUMBER OF MISSING OBSERVATIONS = 2

RANK ASSIGNMENT TO REPAIR FACILITY
QUESTION 14E

CROSS TABULATION OF DESIGNATOR AREA BY

VAR045	DESIG URL (1.)	RL (2.)	STAFF (3.)	CIVILIAN (4.)	ROW TOTAL
1. FIRST CHOICE	9	10	1	2	22
	40.9	45.5	4.5	9.1	12.9
	11.3	12.3	25.0	33.3	
	5.3	5.8	0.6	1.2	
2. SECOND CHOICE	22	12	1	1	36
	61.1	33.3	2.8	2.8	21.1
	27.5	14.8	25.0	16.7	
	12.9	7.0	0.6	0.6	
3. THIRD CHOICE	15	12	2	1	30
	50.0	40.0	6.7	3.3	17.5
	18.8	14.8	50.0	16.7	
	8.8	7.0	1.2	0.6	
4. FOURTH CHOICE	16	23	0	1	40
	40.0	57.5	0.0	2.5	23.4
	20.0	28.4	0.0	16.7	
	9.4	13.5	0.0	0.6	
5. FIFTH CHOICE	18	24	0	1	43
	41.9	55.8	0.0	2.3	25.1
	22.5	29.6	0.0	16.7	
	10.5	14.0	0.0	0.6	
COLUMN TOTAL	80	81	4	6	171
	46.8	47.4	2.3	3.5	100.0

CHI SQUARE = 12.92615 WITH 12 DEGREES OF FREEDOM

NUMBER OF MISSING OBSERVATIONS = 2

RANK LOGISTICS FUNCTIONAL TRAINING
QUESTION 17A

CROSS TABULATION OF DESIGNATOR AREA BY

VAR046	DESIG URL 1.	RL 2.	STAFF 3.	CIVILIAN 4.	ROW TOTAL
1. FIRST CHOICE	8	20	0	1	29
	27.6	69.0	0.0	3.4	17.0
	10.0	24.7	0.0	16.7	
	4.7	11.7	0.0	0.6	
2. SECOND CHOICE	13	26	0	1	40
	32.5	65.0	0.0	2.5	23.4
	16.3	32.1	0.0	16.7	
	7.6	15.2	0.0	0.6	
3. THIRD CHOICE	21	19	0	2	42
	50.0	45.2	0.0	4.8	24.6
	26.3	23.5	0.0	33.3	
	12.3	11.1	0.0	1.2	
4. FOURTH CHOICE	21	12	3	1	37
	56.8	32.4	8.1	2.7	21.6
	26.3	14.8	75.0	16.7	
	12.3	7.0	1.8	0.6	
5. FIFTH CHOICE	17	4	1	1	23
	73.9	17.4	4.3	4.3	13.5
	21.3	4.9	25.0	16.7	
	9.9	2.3	0.6	0.6	
COLUMN TOTAL	80	81	4	6	171
	46.8	47.4	2.3	3.5	100.0

CHI SQUARE = 28.82988 WITH 12 DEGREES OF FREEDOM

NUMBER OF MISSING OBSERVATIONS = 2

RANK PROCUREMENT FUNCTIONAL TRAINING
QUESTION 17B

CROSS TABULATION OF DESIGNATOR AREA BY

VAR047	DESIG URL 1.	RL 2.	STAFF 3.	CIVILIAN 4.	ROW TOTAL
FIRST CHOICE 1.	8	18	0	1	27
	29.6	66.7	0.0	3.7	15.8
	10.0	22.2	0.0	16.7	
	4.7	10.5	0.0	0.6	
SECOND CHOICE 2.	17	12	1	1	31
	54.8	38.7	3.2	3.2	18.1
	21.3	14.8	25.0	16.7	
	9.9	7.0	0.6	0.6	
THIRD CHOICE 3.	16	20	2	0	38
	42.1	52.6	5.3	0.0	22.2
	20.0	24.7	50.0	0.0	
	9.4	11.7	1.2	0.0	
FOURTH CHOICE 4.	21	18	0	3	42
	50.0	42.9	0.0	7.1	24.6
	26.3	22.2	0.0	50.0	
	12.3	10.5	0.0	1.8	
FIFTH CHOICE 5.	18	13	1	1	33
	54.5	39.4	3.0	3.0	19.3
	22.5	16.0	25.0	16.7	
	10.5	7.6	0.6	0.6	
COLUMN TOTAL	80	81	4	6	171
	46.8	47.4	2.3	3.5	100.0

CHI SQUARE = 12.40313 WITH 12 DEGREES OF FREEDOM

NUMBER OF MISSING OBSERVATIONS = 2

RANK CONTRACT ADMINISTRATION TRAINING
QUESTION 17C

CROSS TABULATION OF DESIGNATOR AREA BY

VAR048	DESIG URL 1.	RL 2.	STAFF 3.	CIVILIAN 4.	ROW TOTAL
1. FIRST CHOICE	39	23	2	0	64
	60.9	35.9	3.1	0.0	37.4
	48.8	28.4	50.0	0.0	
	22.8	13.5	1.2	0.0	
2. SECOND CHOICE	14	17	2	2	35
	40.0	48.6	5.7	5.7	20.5
	17.5	21.0	50.0	33.3	
	8.2	9.9	1.2	1.2	
3. THIRD CHOICE	13	16	0	3	32
	40.6	50.0	0.0	9.4	18.7
	16.2	19.8	0.0	50.0	
	7.6	9.4	0.0	1.8	
4. FOURTH CHOICE	9	12	0	0	21
	42.9	57.1	0.0	0.0	12.3
	11.3	14.8	0.0	0.0	
	5.3	7.0	0.0	0.0	
5. FIFTH CHOICE	5	13	0	1	19
	26.3	68.4	0.0	5.3	11.1
	6.3	16.0	0.0	16.7	
	2.9	7.6	0.0	0.6	
COLUMN TOTAL	80	81	4	6	171
	46.8	47.4	2.3	3.5	100.0

CHI SQUARE = 19.46942 WITH 12 DEGREES OF FREEDOM

NUMBER OF MISSING OBSERVATIONS = 2

RANK FINANCIAL MANAGEMENT TRAINING
QUESTION 17D

CROSS TABULATION OF DESIGNATOR AREA BY

VAR049	DESIG: 1. URL	2. RL	3. STAFF	4. CIVILIAN	ROW TOTAL
1. FIRST CHOICE	18	14	1	2	35
	51.4	40.0	2.9	5.7	20.5
	22.5	17.3	25.0	33.3	
	10.5	8.2	0.6	1.2	
2. SECOND CHOICE	14	13	0	1	28
	50.0	46.4	0.0	3.6	16.4
	17.5	16.0	0.0	16.7	
	8.2	7.6	0.0	0.6	
3. THIRD CHOICE	15	13	0	0	28
	53.6	46.4	0.0	0.0	16.4
	18.8	16.0	0.0	0.0	
	8.8	7.6	0.0	0.0	
4. FOURTH CHOICE	13	15	1	1	30
	43.3	50.0	3.3	3.3	17.5
	16.3	18.5	25.0	16.7	
	7.6	8.8	0.6	0.6	
5. FIFTH CHOICE	20	26	2	2	50
	40.0	52.0	4.0	4.0	29.2
	25.0	32.1	50.0	33.3	
	11.7	15.2	1.2	1.2	
COLUMN TOTAL	80	81	4	6	171
	46.8	47.4	2.3	3.5	100.0

CHI SQUARE = 5.32055 WITH 12 DEGREES OF FREEDOM

NUMBER OF MISSING OBSERVATIONS = 2

RANK PRODUCTION AND QUALITY ASSURANCE TRAINING
QUESTION 17E

CROSS TABULATION OF DESIGNATOR AREA BY

VAR056	COUNT / ROW PCT / COL PCT / TOT PCT	DESIG URL 1.	RL 2.	STAFF 3.	CIVILIAN 4.	ROW TOTAL
1. STRONGLY AGREE		5	1	0	1	7
		71.4	14.3	0.0	14.3	4.1
		6.4	1.2	0.0	14.3	
		2.9	0.6	0.0	0.6	
2. AGREE		42	23	2	1	68
		61.8	33.8	2.9	1.5	39.8
		53.8	28.0	50.0	14.3	
		24.6	13.5	1.2	0.6	
3. NEUTRAL		17	25	2	3	47
		36.2	53.2	4.3	6.4	27.5
		21.8	30.5	50.0	42.9	
		9.9	14.6	1.2	1.8	
4. DISAGREE		13	24	0	2	39
		33.3	61.5	0.0	5.1	22.8
		16.7	29.3	0.0	28.6	
		7.6	14.0	0.0	1.2	
5. STRONGLY DISAGRE		1	9	0	0	10
		10.0	90.0	0.0	0.0	5.8
		1.3	11.0	0.0	0.0	
		0.6	5.3	0.0	0.0	
COLUMN TOTAL		78	82	4	7	171
		45.6	48.0	2.3	4.1	100.0

CHI SQUARE = 26.02806 WITH 12 DEGREES OF FREEDOM

NUMBER OF MISSING OBSERVATIONS = 2

"TEST PILOT/NUCLEAR POWER TRAINING IS GOOD TECHNICAL BASIS" QUESTION 24

CROSS TABULATION OF DESIGNATOR AREA BY

VAR059	COUNT / ROW PCT / COL PCT / TOT PCT	DESIG URL 1.	RL 2.	STAFF 3.	CIVILIAN 4.	ROW TOTAL
1. STRONGLY AGREE		1	3	0	0	4
		25.0	75.0	0.0	0.0	2.3
		1.3	3.7	0.0	0.0	
		0.6	1.7	0.0	0.0	
2. AGREE		8	16	0	0	24
		33.3	66.7	0.0	0.0	14.0
		10.0	19.8	0.0	0.0	
		4.7	9.3	0.0	0.0	
3. NEUTRAL		20	24	1	1	46
		43.5	52.2	2.2	2.2	26.7
		25.0	29.6	25.0	14.3	
		11.6	14.0	0.6	0.6	
4. DISAGREE		42	33	3	4	82
		51.2	40.2	3.7	4.9	47.7
		52.5	40.7	75.0	57.1	
		24.4	19.2	1.7	2.3	
5. STRONGLY DISAGRE		9	5	0	2	16
		56.3	31.3	0.0	12.5	9.3
		11.3	6.2	0.0	28.6	
		5.2	2.9	0.0	1.2	
COLUMN TOTAL		80	81	4	7	172
		46.5	47.1	2.3	4.1	100.0

CHI SQUARE = 12.76361 WITH 12 DEGREES OF FREEDOM

NUMBER OF MISSING OBSERVATIONS = 1

"DEVELOPMENT OF WSAM WILL HARM EXISTING
RL COMMUNITIES" QUESTION 27

CROSS TABULATION OF DESIGNATOR AREAS BY

VAR061	DESIG URL 1.	RL 2.	STAFF 3.	CIVILIAN 4.	ROW TOTAL
1. STRONGLY AGREE	25	5	0	0	30
	83.3	16.7	0.0	0.0	17.6
	32.1	6.2	0.0	0.0	
	14.7	2.9	0.0	0.0	
2. AGREE	34	28	1	4	67
	50.7	41.8	1.5	6.0	39.4
	43.6	34.6	25.0	57.1	
	20.0	16.5	0.6	2.4	
3. NEUTRAL	3	4	0	2	9
	33.3	44.4	0.0	22.2	5.3
	3.8	4.9	0.0	28.6	
	1.8	2.4	0.0	1.2	
4. DISAGREE	13	33	3	0	49
	26.5	67.3	6.1	0.0	28.8
	16.7	40.7	75.0	0.0	
	7.6	19.4	1.8	0.0	
5. STRONGLY DISAGREE	3	11	0	1	15
	20.0	73.3	0.0	6.7	8.8
	3.8	13.6	0.0	14.3	
	1.8	6.5	0.0	0.6	
COLUMN TOTAL	78	81	4	7	170
	45.9	47.6	2.4	4.1	100.0

CHI SQUARE = 44.27988 WITH 12 DEGREES OF FREEDOM

NUMBER OF MISSING OBSERVATIONS = 3

"FORCE FEEDING OF URL INTO SYSCOMS IS NECESSARY"
QUESTION 29

CROSS TABULATION OF DESIGNATOR AREA BY

VAR062	DESIG	URL (1.)	RL (2.)	STAFF (3.)	CIVILIAN (4.)	ROW TOTAL
1. STRONGLY AGREE	COUNT	15	6	0	3	24
	ROW PCT	62.5	25.0	0.0	12.5	14.0
	COL PCT	19.0	7.3	0.0	42.9	
	TOT PCT	8.7	3.5	0.0	1.7	
2. AGREE	COUNT	32	35	1	2	70
	ROW PCT	45.7	50.0	1.4	2.9	40.7
	COL PCT	40.5	42.7	25.0	28.6	
	TOT PCT	18.6	20.3	0.6	1.2	
3. NEUTRAL	COUNT	15	23	2	1	41
	ROW PCT	36.6	56.1	4.9	2.4	23.8
	COL PCT	19.0	28.0	50.0	14.3	
	TOT PCT	8.7	13.4	1.2	0.6	
4. DISAGREE	COUNT	10	13	0	1	24
	ROW PCT	41.7	54.2	0.0	4.2	14.0
	COL PCT	12.7	15.9	0.0	14.3	
	TOT PCT	5.8	7.6	0.0	0.6	
5. STRONGLY DISAGREE	COUNT	7	5	1	0	13
	ROW PCT	53.8	38.5	7.7	0.0	7.6
	COL PCT	8.9	6.1	25.0	0.0	
	TOT PCT	4.1	2.9	0.6	0.0	
COLUMN TOTAL		79	82	4	7	172
		45.9	47.7	2.3	4.1	100.0

CHI SQUARE = 15.56720 WITH 12 DEGREES OF FREEDOM

NUMBER OF MISSING OBSERVATIONS = 1

"COMMAND EQUIVALENCE OF PM MOTIVATES REPEATED TOURS"
QUESTION 30

CROSS TABULATION OF DESIGNATOR AREA BY

DESIG

VAR064	URL 1.	RL 2.	STAFF 3.	CIVILIAN 4.	ROW TOTAL
1. STRONGLY AGREE	3	7	0	0	10
	30.0	70.0	0.0	0.0	5.8
	3.8	8.6	0.0	0.0	
	1.8	4.1	0.0	0.0	
2. AGREE	11	12	1	0	24
	45.8	50.0	4.2	0.0	14.0
	13.9	14.8	25.0	0.0	
	6.4	7.0	0.6	0.0	
3. NEUTRAL	29	39	1	4	73
	39.7	53.4	1.4	5.5	42.7
	36.7	48.1	25.0	57.1	
	17.0	22.8	0.6	2.3	
4. DISAGREE	33	23	2	3	61
	54.1	37.7	3.3	4.9	35.7
	41.8	28.4	50.0	42.9	
	19.3	13.5	1.2	1.8	
5. STRONGLY DISAGREE	3	0	0	0	3
	100.0	0.0	0.0	0.0	1.8
	3.8	0.0	0.0	0.0	
	1.8	0.0	0.0	0.0	
COLUMN TOTAL	79	81	4	7	171
	46.2	47.4	2.3	4.1	100.0

CHI SQUARE = 11.36810 WITH 12 DEGREES OF FREEDOM

NUMBER OF MISSING OBSERVATIONS = 2

"NO ADVANTAGE TO OTMS AND SUBSPECIALTY MANAGEMENT"
QUESTION 32

CROSS TABULATION OF DESIGNATOR AREA BY

VAR066	DESIG: URL (1.)	RL (2.)	STAFF (3.)	CIVILIAN (4.)	ROW TOTAL
1. STRONGLY AGREE	4 40.0 5.1 2.3	4 40.0 4.9 2.3	0 0.0 0.0 0.0	2 20.0 28.6 1.2	10 5.8
2. AGREE	18 36.7 22.8 10.5	29 59.2 35.4 16.9	0 0.0 0.0 0.0	2 4.1 28.6 1.2	49 28.5
3. NEUTRAL	34 50.7 43.0 19.8	29 43.3 35.4 16.9	2 3.0 50.0 1.2	2 3.0 28.6 1.2	67 39.0
4. DISAGREE	20 48.8 25.3 11.6	18 43.9 22.0 10.5	2 4.9 50.0 1.2	1 2.4 14.3 0.6	41 23.8
5. STRONGLY DISAGRE	3 60.0 3.8 1.7	2 40.0 2.4 1.2	0 0.0 0.0 0.0	0 0.0 0.0 0.0	5 2.9
COLUMN TOTAL	79 45.9	82 47.7	4 2.3	7 4.1	172 100.0

CHI SQUARE = 13.20803 WITH 12 DEGREES OF FREEDOM

NUMBER OF MISSING OBSERVATIONS = 1

"PROMOTION OPPORTUNITY FOR WSAM WILL ALLOW SUCCESSIVE WSAM TOURS" QUESTION 34

CROSS TABULATION OF DESIGNATOR AREA BY

VAR067	DESIG: 1. URL	2. RL	3. STAFF	4. CIVILIAN	ROW TOTAL
1. STRONGLY AGREE	5	2	0	0	7
	71.4	28.6	0.0	0.0	4.1
	6.3	2.4	0.0	0.0	
	2.9	1.2	0.0	0.0	
2. AGREE	20	16	0	0	36
	55.6	44.4	0.0	0.0	20.9
	25.3	19.5	0.0	0.0	
	11.6	9.3	0.0	0.0	
3. NEUTRAL	24	28	2	3	57
	42.1	49.1	3.5	5.3	33.1
	30.4	34.1	50.0	42.9	
	14.0	16.3	1.2	1.7	
4. DISAGREE	27	30	2	4	63
	42.9	47.6	3.2	6.3	36.6
	34.2	36.6	50.0	57.1	
	15.7	17.4	1.2	2.3	
5. STRONGLY DISAGREE	3	6	0	0	9
	33.3	66.7	0.0	0.0	5.2
	3.8	7.3	0.0	0.0	
	1.7	3.5	0.0	0.0	
COLUMN TOTAL	79	82	4	7	172
	45.9	47.7	2.3	4.1	100.0

CHI SQUARE = 8.52750 WITH 12 DEGREES OF FREEDOM

NUMBER OF MISSING OBSERVATIONS = 1

"PM SHOULD ATTEND INDUSTRIAL COLLEGE AF"
QUESTION 35

CROSS TABULATION OF DESIGNATOR AREA BY

VAR068	COUNT / ROW PCT / COL PCT / TOT PCT	DESIG URL 1.	RL 2.	STAFF 3.	CIVILIAN 4.	ROW TOTAL
1. STRONGLY AGREE		20	18	0	3	41
		48.8	43.9	0.0	7.3	23.8
		25.3	22.0	0.0	42.9	
		11.6	10.5	0.0	1.7	
2. AGREE		46	56	3	4	111
		43.2	50.5	2.7	3.6	64.5
		60.8	68.3	75.0	57.1	
		27.9	32.6	1.7	2.3	
3. NEUTRAL		3	3	0	0	6
		50.0	50.0	0.0	0.0	3.5
		3.8	3.7	0.0	0.0	
		1.7	1.7	0.0	0.0	
4. DISAGREE		8	4	1	0	13
		61.5	30.8	7.7	0.0	7.6
		10.1	4.9	25.0	0.0	
		4.7	2.3	0.6	0.0	
5. STRONGLY DISAGRE		0	1	0	0	1
		0.0	100.0	0.0	0.0	0.6
		0.0	1.2	0.0	0.0	
		0.0	0.6	0.0	0.0	
COLUMN TOTAL		79	82	4	7	172
		45.9	47.7	2.3	4.1	100.0

CHI SQUARE = 7.80938 WITH 12 DEGREES OF FREEDOM

NUMBER OF MISSING OBSERVATIONS = 1

"EXCHANGE WASHINGTON/FIELD OFFICERS WILL PROMOTE UNDERSTANDING/COOPERATION" QUESTION 36

CROSS TABULATION OF DESIGNATOR AREA BY

VAR069	COUNT / ROW PCT / COL PCT / TOT PCT	DESIG URL 1.	RL 2.	STAFF 3.	CIVILIAN 4.	ROW TOTAL
1. STRONGLY AGREE		0	2	0	0	2
		0.0	100.0	0.0	0.0	1.2
		0.0	2.4	0.0	0.0	
		0.0	1.2	0.0	0.0	
2. AGREE		13	27	1	2	43
		30.2	62.8	2.3	4.7	24.9
		16.3	32.9	25.0	28.6	
		7.5	15.6	0.6	1.2	
3. NEUTRAL		18	13	0	0	31
		58.1	41.9	0.0	0.0	17.9
		22.5	15.9	0.0	0.0	
		10.4	7.5	0.0	0.0	
4. DISAGREE		43	39	3	5	90
		47.8	43.3	3.3	5.6	52.0
		53.8	47.6	75.0	71.4	
		24.9	22.5	1.7	2.9	
5. STRONGLY DISAGREE		6	1	0	0	7
		85.7	14.3	0.0	0.0	4.0
		7.5	1.2	0.0	0.0	
		3.5	0.6	0.0	0.0	
COLUMN TOTAL		80	82	4	7	173
		46.2	47.4	2.3	4.0	100.0

CHI SQUARE = 15.58950 WITH 12 DEGREES OF FREEDOM

"CAREER DEVELOPMENT OF PM AGGRANDIZE PM TO DETRIMENT OF FUNCTIONAL" QUESTION 37

CROSS TABULATION OF DESIGNATOR AREA BY

VAR071	DESIG URL 1.	RL 2.	STAFF 3.	CIVILIAN 4.	ROW TOTAL
1. STRONGLY AGREE	5	3	0	0	8
	62.5	37.5	0.0	0.0	4.6
	6.3	3.7	0.0	0.0	
	2.9	1.7	0.0	0.0	
2. AGREE	14	25	1	1	41
	34.1	61.0	2.4	2.4	23.7
	17.5	30.5	25.0	14.3	
	8.1	14.5	0.6	0.6	
3. NEUTRAL	7	8	1	1	17
	41.2	47.1	5.9	5.9	9.8
	8.8	9.8	25.0	14.3	
	4.0	4.6	0.6	0.6	
4. DISAGREE	34	31	1	2	68
	50.0	45.6	1.5	2.9	39.3
	42.5	37.8	25.0	28.6	
	19.7	17.9	0.6	1.2	
5. STRONGLY DISAGREE	20	15	1	3	39
	51.3	38.5	2.6	7.7	22.5
	25.0	18.3	25.0	42.9	
	11.6	8.7	0.6	1.7	
COLUMN TOTAL	80	82	4	7	173
	46.2	47.4	2.3	4.0	100.0

CHI SQUARE = 8.29282 WITH 12 DEGREES OF FREEDOM

"PROJECT MANAGERS BORN NOT MADE"
QUESTION 39

CROSS TABULATION OF DESIGNATOR AREA BY

VAR072	DESIG URL 1.	RL 2.	STAFF 3.	CIVILIAN 4.	ROW TOTAL
1. STRONGLY AGREE	13	29	1	1	44
	29.5	65.9	2.3	2.3	25.9
	16.7	35.4	25.0	16.7	
	7.6	17.1	0.6	0.6	
2. AGREE	27	36	1	4	68
	39.7	52.9	1.5	5.9	40.0
	34.6	43.9	25.0	66.7	
	15.9	21.2	0.6	2.4	
3. NEUTRAL	13	10	1	1	25
	52.0	40.0	4.0	4.0	14.7
	16.7	12.2	25.0	16.7	
	7.6	5.9	0.6	0.6	
4. DISAGREE	13	6	1	0	20
	65.0	30.0	5.0	0.0	11.8
	16.7	7.3	25.0	0.0	
	7.6	3.5	0.6	0.0	
5. STRONGLY DISAGREE	12	1	0	0	13
	92.3	7.7	0.0	0.0	7.6
	15.4	1.2	0.0	0.0	
	7.1	0.6	0.0	0.0	
COLUMN TOTAL	78	82	4	6	170
	45.9	48.2	2.4	3.5	100.0

CHI SQUARE = 24.21031 WITH 12 DEGREES OF FREEDOM

NUMBER OF MISSING OBSERVATIONS = 3

"WSAM EXPERIENCE AS CAREER ENHANCING AS OTHER DUTY" QUESTION 40

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ABSTRACT

Project Manager Development programs in use in defense industry have been surveyed and opportunities for improvement in subspecialty development identified. In addition, suggested billets for systems acquisition management development are listed and a method of individual development planning proposed.

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Executive Development						
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